



Objectives:

~~**FORMATIVE vs. SUMMATIVE**~~

***FORMATIVE AND SUMMATIVE
ASSESSMENT CONTINUUM***



Objectives:

FORMATIVE AND SUMMATIVE ASSESSMENT CONTINUUM

Taras: A discussion of the explicit relationship between summative and formative assessment processes has been absent from educational discussions.



Objectives:

FORMATIVE AND SUMMATIVE ASSESSMENT CONTINUUM

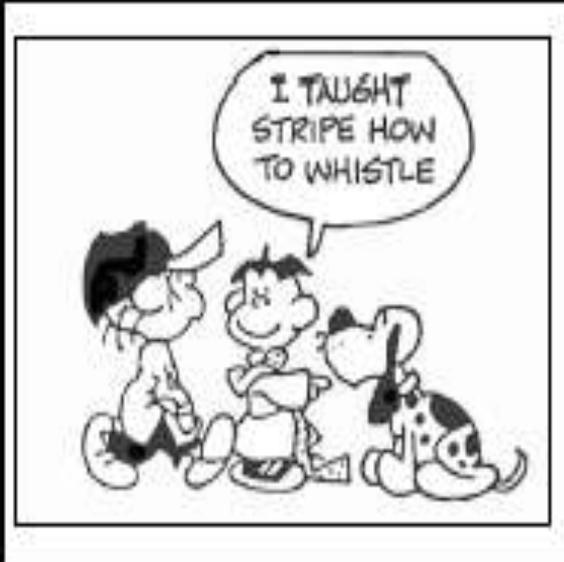
***Blake and Williams: It is not realistic
to separate the two types of
assessment.***



Objectives:

- *Establish the importance of an integrated view of assessments involving the interplay of formative and summative assessments*
- *Discuss the design of an assessment map or continuum showing the Integration of formative and summative assessments*
- *Relate how the design of a formative and summative assessment map or continuum is based on the K12 content and performance standards and is used to monitor and report the students' learning proficiency*
- *Uncover important challenges facing teachers in the design and use of an assessment map or continuum in the K12 program*

ASSESSMENT = MEANS OF OBTAINING EVIDENCE





Assessment is the ongoing process of gathering, analysing and reflecting on **evidence** to make informed and consistent judgements to improve future student learning.

WHAT KIND OF EVIDENCE SHOULD WE LOOK FOR IN STUDENTS UNDERGOING THE K12 PROGRAM?

HOW DO WE OBTAIN THIS EVIDENCE IN FORMATIVE AND SUMMATIVE WAYS IN A STANDARDS-BASED CURRICULUM?

K TO 12 STRUCTURE

Senior High School
Grades 11 to 12



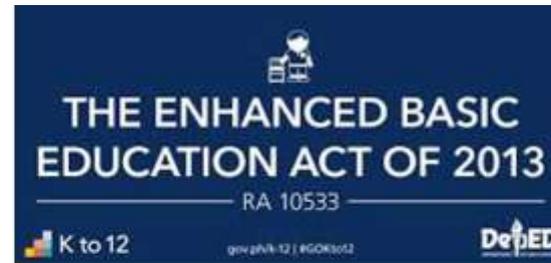
Junior High School
Grades 7 to 10



Elementary
Grades 1 to 6



Mandatory
Kindergarten



MAY 15, 2013



NEW ASSESSMENT AND GRADING SYSTEM

DepEd MEMORANDUM
 No. **158**, s. 2011

JUL 15 2011

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DepEd O R D E R
 No. **8**, s. 2015

POLICY GUIDELINES ON CLASSROOM ASSESSMENT FOR THE K TO 12 BASIC EDUCATION PROGRAM

To: Undersecretaries
 Assistant Secretaries
 Bureau Directors
 Directors of Services, Centers and Heads of Units
 Regional Directors
 Schools Division Superintendents
 Heads, Public Elementary and Secondary Schools
 All Others Concerned

1. In line with the implementation of the *Enhanced Basic Education Act of 2013* (Republic Act No. 10533), the Department of Education is adopting the enclosed **Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program.**

01 APR 2015

(Enclosure No. 1 to DepEd Order No. 73, s. 2012)

GENERAL GUIDELINES FOR THE ASSESSMENT AND RATING OF LEARNING OUTCOMES

A. Philosophy

Assessment shall be used primarily as a quality assurance tool to track student progress in the attainment of standards promote self-reflection and personal accountability for one's learning, and provide a basis for the profiling of student performance.

B. Nature and Purpose of Assessment

Assessment shall be holistic, with emphasis on the formative or developmental purpose of quality assuring student learning. It is also standards-based as it seeks to ensure that teachers will teach to the standards and students will aim to meet or even exceed the standards. The students' attainment of standards in terms of content and performance is, therefore, a critical evidence of learning.

II. What is Classroom Assessment?

Assessment is a process that is used to keep track of learners' progress in relation to learning standards and in the development of 21st-century skills; to promote self-reflection and personal accountability among students about their own learning; and to provide bases for the profiling of student performance on the learning competencies and standards of the curriculum. Various kinds of assessments shall be used appropriately for different learners who come from diverse contexts, such as cultural background and life experiences.

Classroom Assessment is an ongoing process of identifying, gathering, organizing, and interpreting quantitative and qualitative information about what learners know and can do.

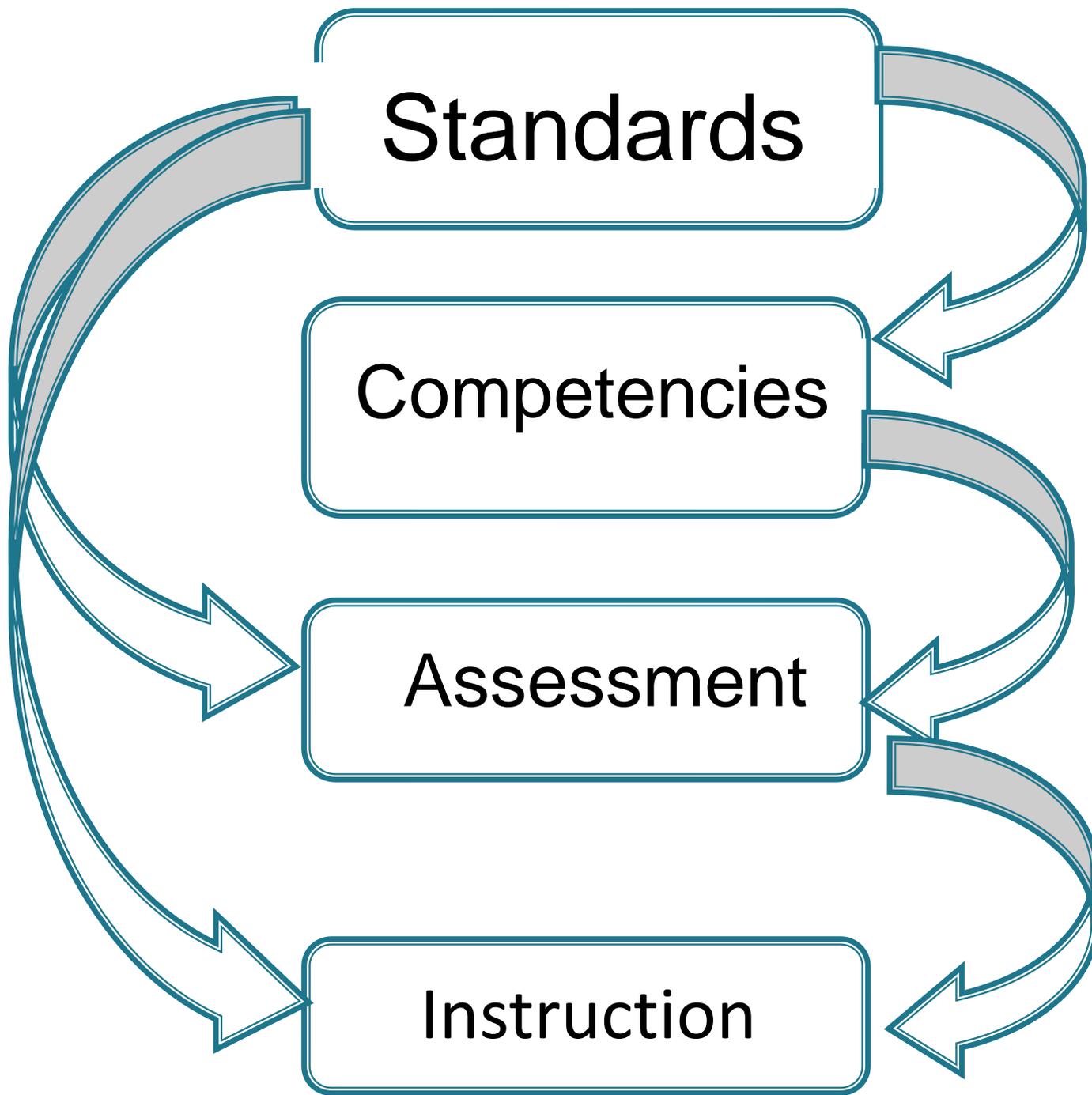
Teachers should employ classroom assessment methods that are consistent with curriculum standards. It is important for teachers to always inform learners about the objectives of the lesson so that the latter will aim to meet or even exceed the standards. The teacher provides immediate feedback to students about their learning progress. Classroom assessment also measures the achievement of competencies by the learners.

**THE K+ 12 GRADUATE:
GLOBALLY COMPETITIVE WITH 21ST CENTURY SKILLS**



K-12 ASSESSMENT:

- **STANDARDS-BASED**
- **MEASURES AND DEVELOPS STUDENTS' 21ST CENTURY SKILLS**



Standards

Competencies

Assessment

Instruction

designed to monitor student progress during the learning process*

**ASSESSMENT
AS LEARNING
(FORMATIVE)**

determine academic gain after completing a learning unit*

**ASSESSMENT
FOR LEARNING
(FORMATIVE)**

**ASSESSMENT
OF LEARNING
(SUMMATIVE)**

What problems are students having in achieving the standard?

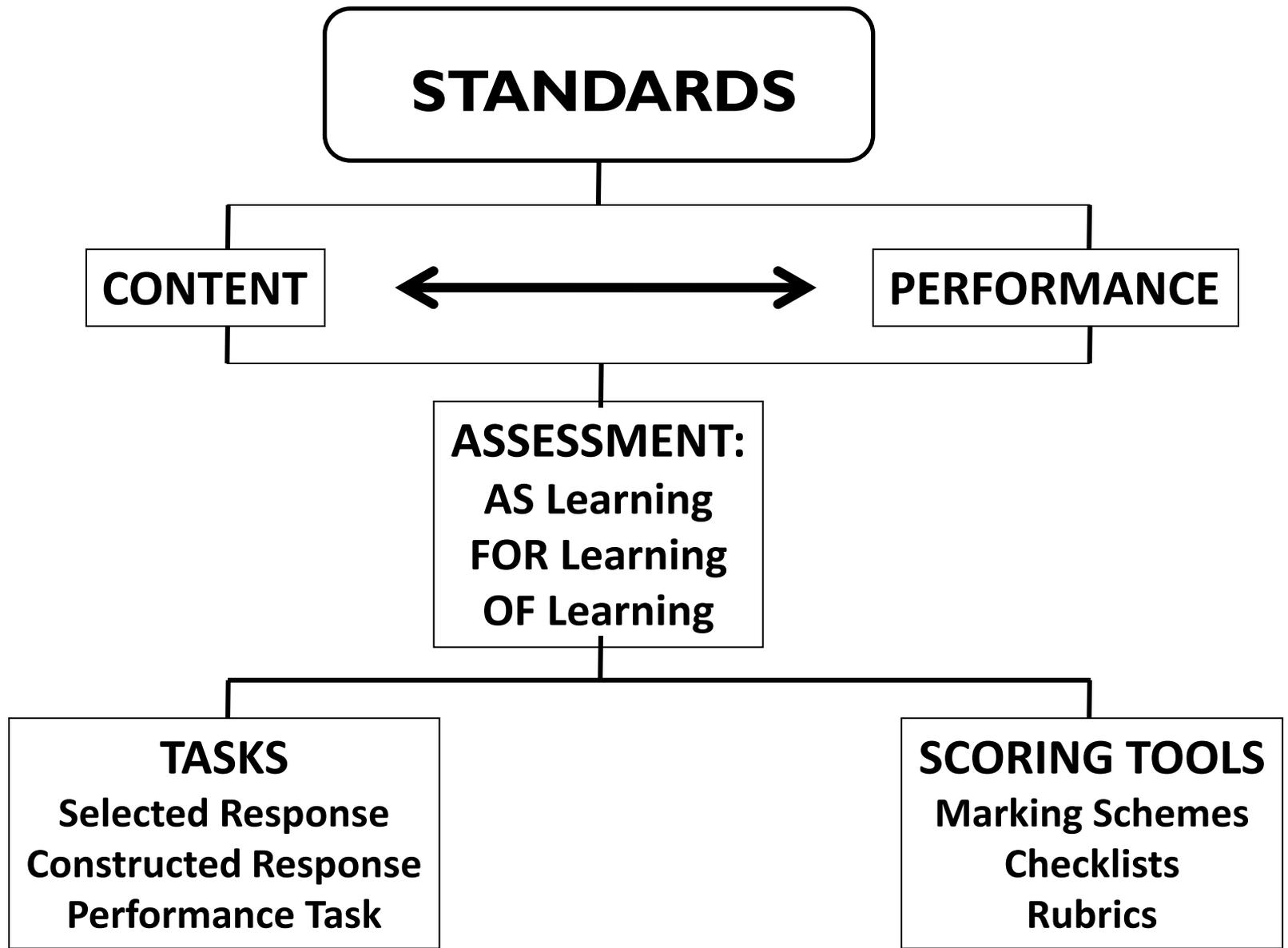
How are students developing 21st century skills?

K-12 ASSESSMENT:

- **STANDARDS-BASED**
- **MEASURES AND DEVELOPS STUDENTS' 21st CENTURY SKILLS**

What aspects of the standards have students achieved?

To what extent are students showing 21st century skills?



END RESULT: EVIDENCE OF PROFICIENCY



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**PROFICIENCY:
MASTERY THINKING
AND 21st CENTURY LEARNING SKILLS
MADE VISIBLE**

RESEARCH ON CLASSROOM SUMMATIVE ASSESSMENT

CONNIE M. MOSS

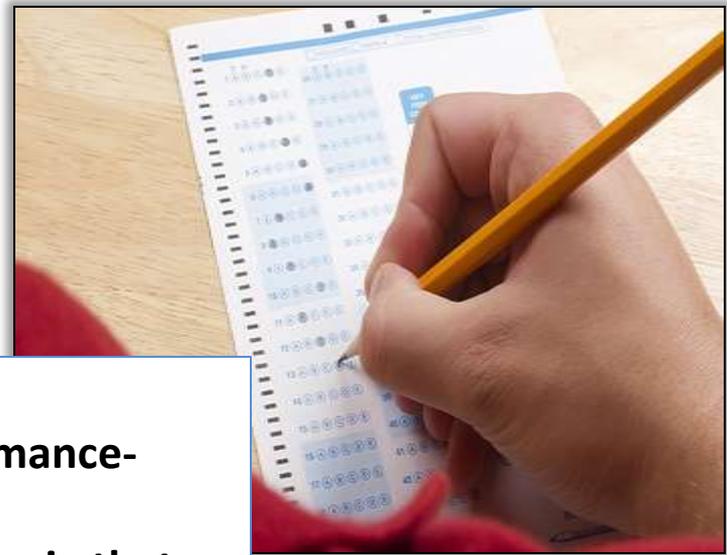
Assessment is unquestionably one of the teacher's most complex and important tasks. What teachers assess and how and why they assess it sends a clear message to students about what is worth learning, how it should be learned, and how well they are expected to learn it. As a result of increased influences from external high stakes tests, teachers are increasingly working to align their CAs with a continuum of benchmarks and standards, and students are studying for and taking more CAs. Clearly, high-stakes external tests shape much of what is happening in classrooms (Clarke, Madaus, Horn, & Ramos, 2000). Teachers design assessments for a variety of purposes and deliver them with mixed results. Some bring students a sense of success and fairness, while others strengthen student perceptions of failure and injustice. Regardless of their intended purpose, CAs directly or indirectly influence students' future learning, achievement, and motivation to learn.

The primary purpose of this chapter is to

recent reviews of summative assessment practices are overviewed. Next, the chapter reviews current studies of summative CAs illustrating common research themes and synthesizing prevailing recommendations. The chapter concludes by drawing conclusions about what we currently know regarding effective CA practices and highlighting areas in need of further research.

SETTING THE CONTEXT: THE RESEARCH ON SUMMATIVE CLASSROOM ASSESSMENTS

Assessment is a process of collecting and interpreting evidence of student progress to inform reasoned judgments about what a student or group of students knows relative to the identified learning goals (National Research Council [NRC], 2001). How teachers carry out this process depends on the purpose of the assessment rather than on any particular method of gather-



RESEARCH FINDINGS ON SUMMATIVE ASSESSMENTS:

- 1. Teachers use school-based norms rather than performance-based criteria in summative assessments.**
- 2. Teachers seemed to have personal standards and criteria that they carry around in their heads. These personal standards come from experience and allow teachers to reach agreement on student ability and what is “average.” These *in the head* criteria and standards were not explicitly stated nor elaborated upon.**
- 3. Teachers misinterpret student achievement and misestimate students’ abilities.**
- 4. Teachers use idiosyncratic methods and these tendencies allow teachers to pull for students who *deserve* better grades or adjust scores down for students with poor attitudes or behavior (Wyatt-Smith et al., 2010).**
- 5. Traditional and routine practices are common across the board with low-level recall and objective tests figuring prominently in the assessment arsenals of teachers regardless of grade level or subject area.**

- Moss, 2012

***SOUNDS
FAMILIAR?***

DOMINANCE OF STANDARDIZED PARADIGM

CONTENT

PERFORMANCE

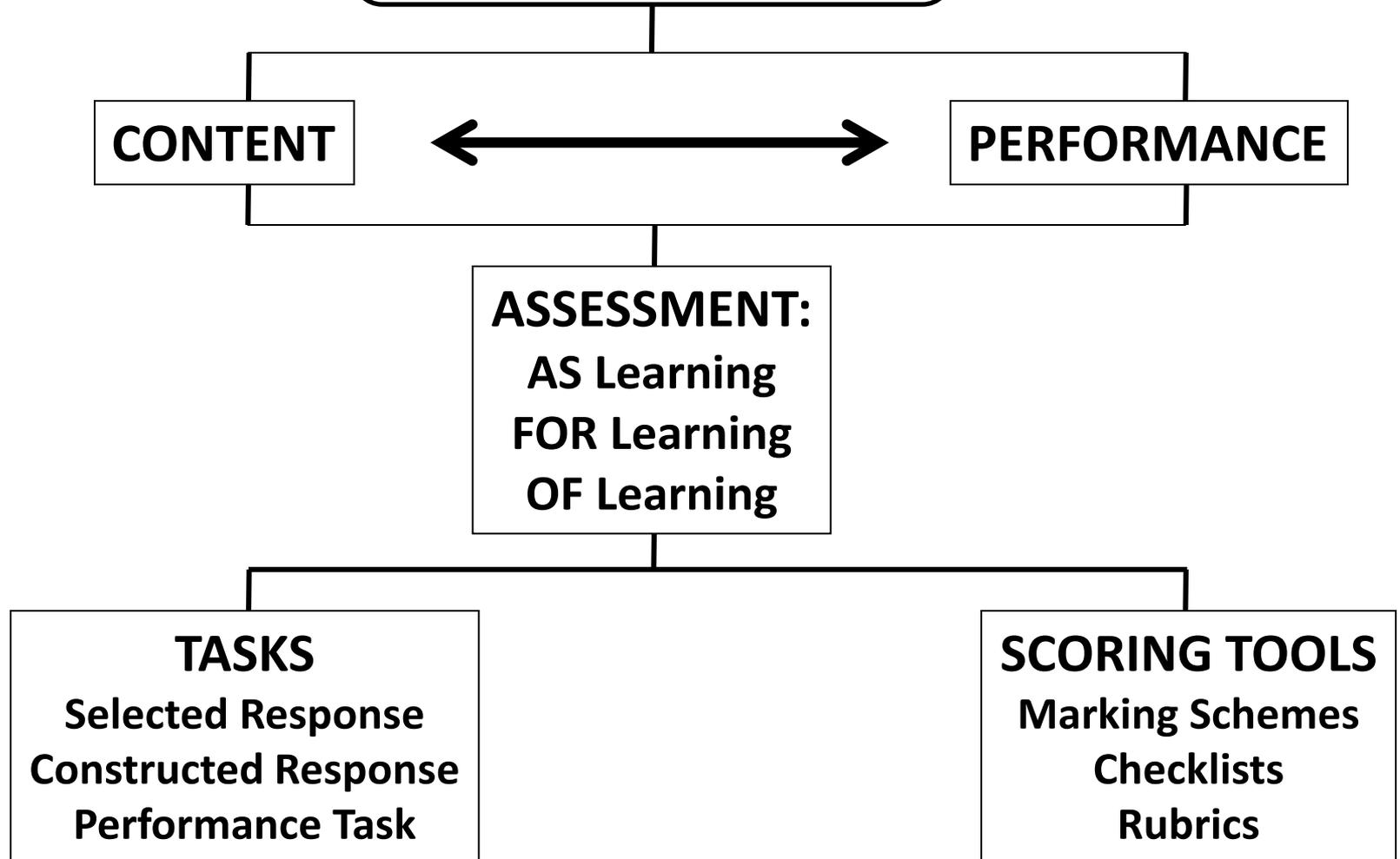


ASSESSMENT:
AS Learning
FOR Learning
OF Learning

TASKS
Selected Response
Constructed Response
Performance Task

SCORING TOOLS
Marking Schemes
Checklists
Rubrics

DOMINANCE OF STANDARDIZED PARADIGM



“BECward” in assessment and instruction



**How should we understand
standards-based
assessment?**

**BEC
standardized
assessment**

**K12
standards-based
assessment**



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March 1999 | Volume 56 | Number 6

Using Standards and Assessments Pages 8-15

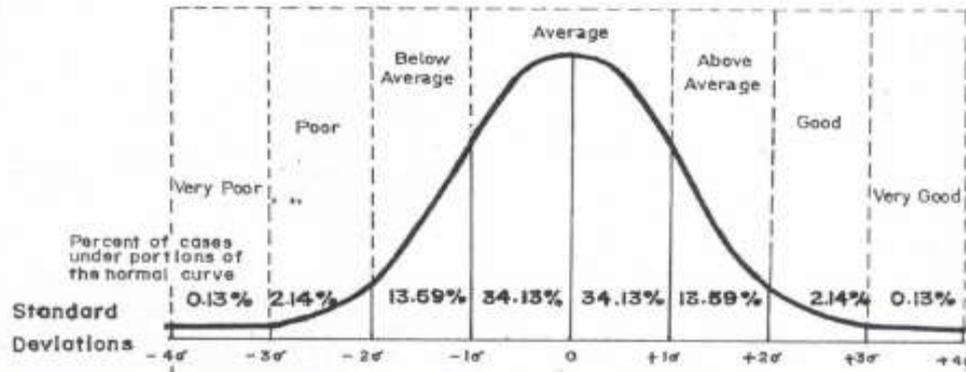
Why Standardized Tests Don't Measure Educational Quality

W. James Popham

Educators are experiencing almost relentless pressure to show their effectiveness. Unfortunately, the chief indicator by which most communities judge a school staff's success is student performance on standardized achievement tests.



The Normal Curve as the Point of Reference for the Standards in Assessment



NAT

a. Mastery Level

0-4 5-15 16-34 35-65 66-85 86-95 96-100

b. Quartile Distribution

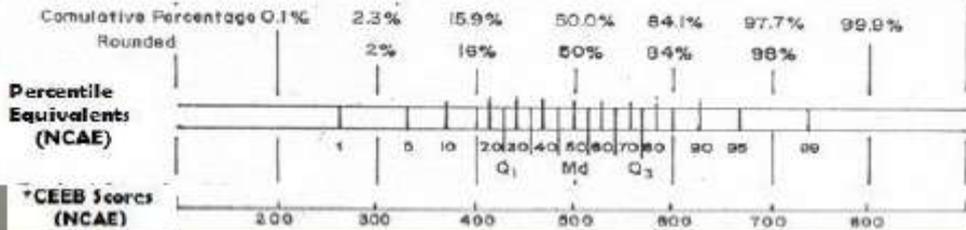
0-25 Poor 26-50 Below Average 51-75 Above Average 76-100 Excellent/ Superior

c. Standards of Achievement

0-34% 35-74% 75-89% 90-100%

Poor Below Average Meeting Standard Superior

NCAE



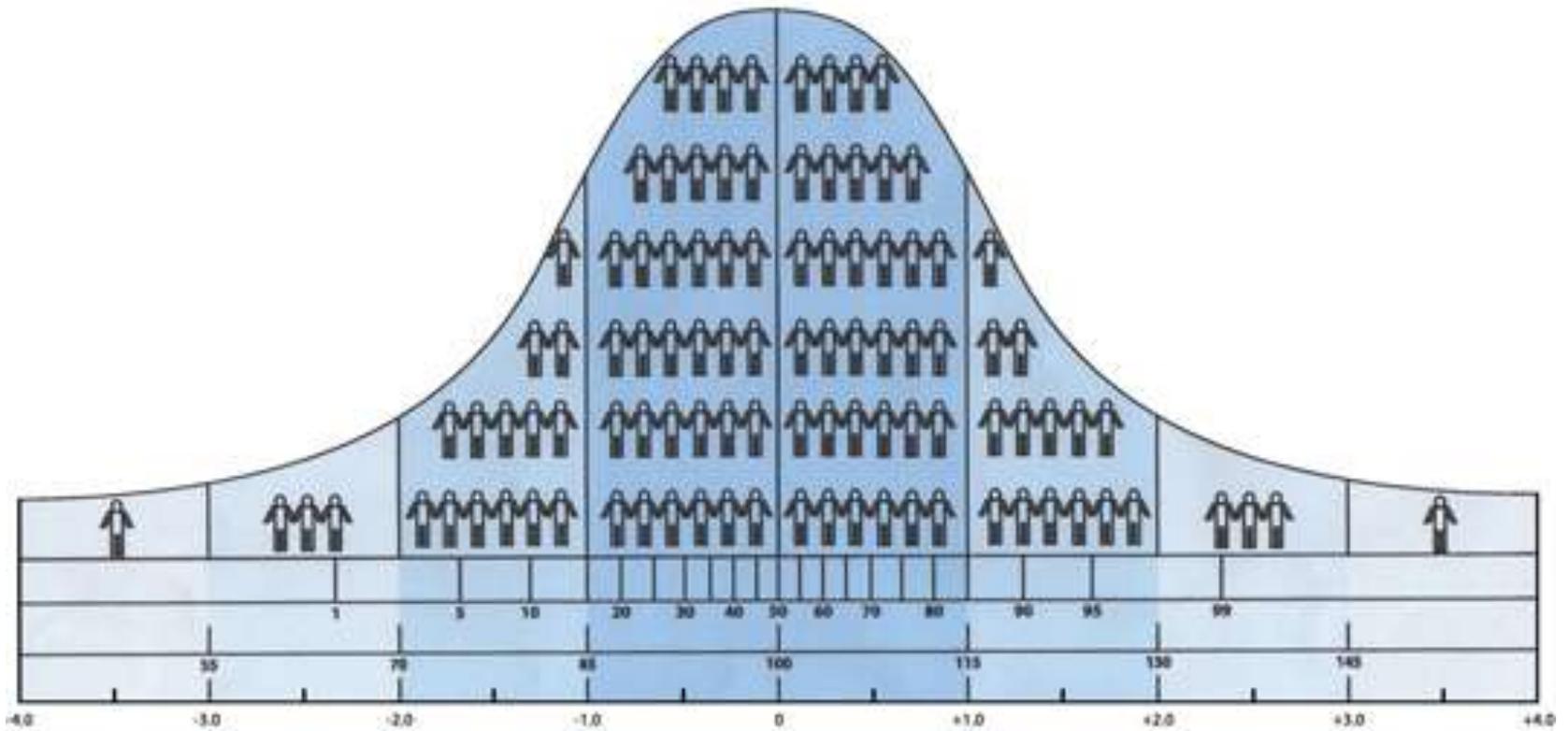
NCAE Percentile Rank (PR)

0-2 3-14 15-50 51-85 86-97 98-99 99+



“ Norm-referenced tests are not about assessing excellence; they are about sorting students (or schools) into winners and losers. The animating spirit is not ‘How well are they learning?’ but- “Who's beating whom?’”

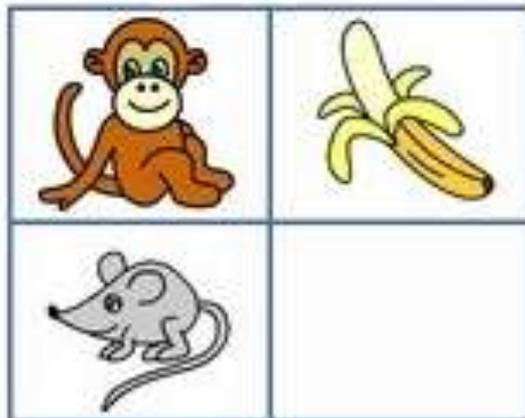
-Alfie Kohn



The more unfamiliar the question, the better.

STANDARDIZED TEST	STANDARDS-BASED TEST
<p>Norm-referenced; students are compared to a mark of a comparison or norm group</p>	
<p>All students are ranked; some have to “fail” or fall below the mean and some have to succeed or above the mean</p>	
<p>Constructed towards level of middle difficulty to spread out test scores; excludes items which many students answer well; deceptive indicator of school effectiveness</p>	
<p>Items may not at all be actually taught in school; items based on background or native intellectual ability</p>	

Picture Analogy



“It is all too easy to conclude that some cultural groups are deficient in academic competence, when the differences can instead be attributable to cultural variations in the ways students interpret the meaning, information demands, and activity of taking tests .”

- (Steele, 1995, 1997)

STANDARDIZED TEST	STANDARDS-BASED TEST
<p>Norm-referenced; students are compared to a mark of a comparison or norm group</p>	
<p>All students are ranked; some have to “fail” or fall below the mean and some have to succeed or above the mean</p>	
<p>Constructed towards level of middle difficulty to spread out test scores; excludes items which many students answer well; deceptive indicator of school effectiveness</p>	<div data-bbox="1238 522 1850 925" style="border: 1px solid black; padding: 10px; text-align: center;"> <p>EASY TO CHECK</p> <p>INVOLVES RECALL</p> </div>
<p>Items may not at all be actually taught in school; items based on background or native intellectual ability</p>	

STANDARDIZED TEST	STANDARDS-BASED TEST
<p>Norm-referenced; students are compared to a mark of a comparison or norm group</p>	
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<p>Constructed towards level of middle difficulty to spread out test scores; excludes items which many students answer well; deceptive indicator of school effectiveness</p>	
<p>Items may not at all be actually taught in school; items based on background or native intellectual ability</p>	

Can these measure a student’s development of 21st century skills?

Pett Peeves

BY JOEL PETT



“Standardized tests can't measure initiative, creativity, imagination, conceptual thinking, curiosity, effort, irony, judgment, commitment, nuance, good will, ethical reflection, or a host of other valuable dispositions and attributes.”

- Bill Ayers



REVIEW

June 2002

EPPI-Centre

**A systematic review of
the impact of
summative assessment
and tests on students'
motivation for learning**

*Review conducted by the Assessment and Learning Research
Synthesis Group*



**Evidence for Policy and Practice
Information and Co-ordinating Centre**

http://eppi.ioe.ac.uk/eppiwebcontent/reel/review_groups/assessment/ass_rv1/ass_rv1

The use of repeated practice tests which impresses on students the importance of the tests, and leads to students adopting test-taking strategies designed to avoid effort and responsibility and which are detrimental to higher order thinking (Paris et al., 1991; Reay and Wiliam, 1999).



REVIEW

June 2002

EPPI-Centre

**A systematic review of
the impact of
summative assessment
and tests on students'
motivation for learning**

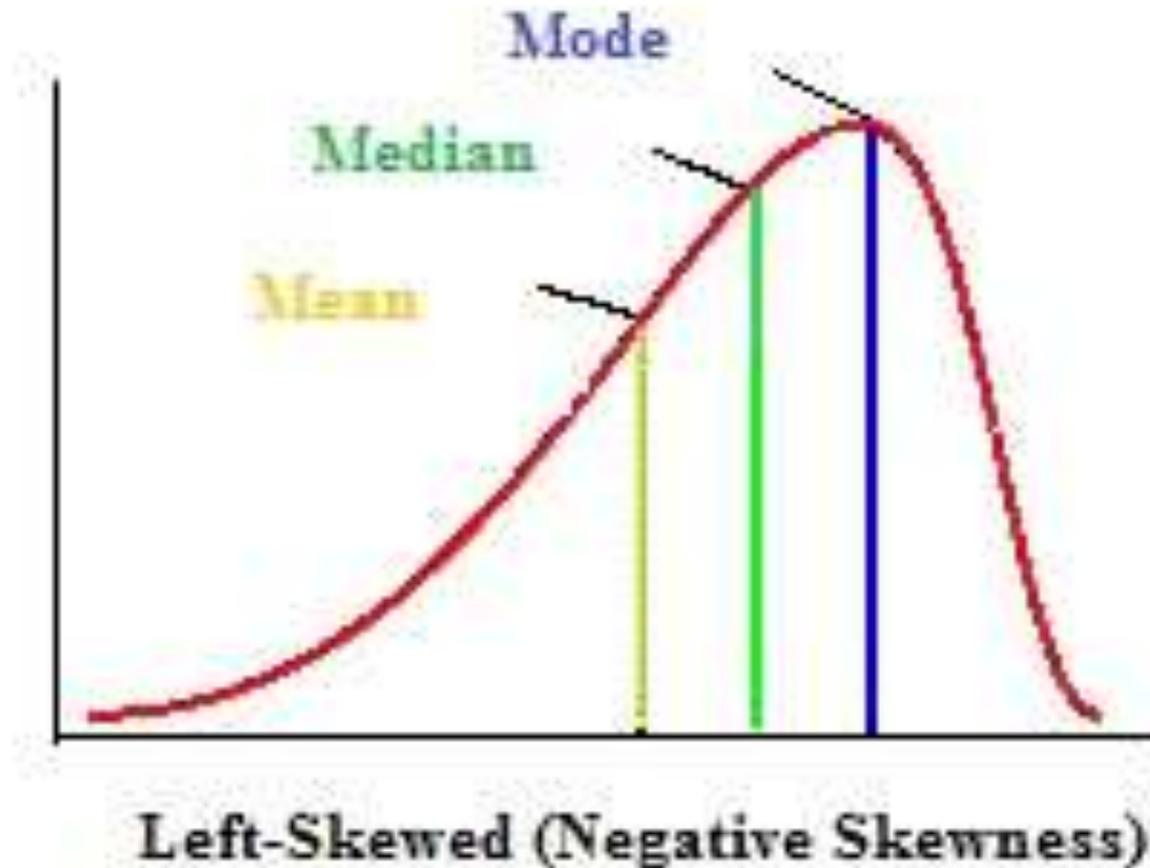
*Review conducted by the Assessment and Learning Research
Synthesis Group*



**Evidence for Policy and Practice
Information and Co-ordinating Centre**

http://eppi.ioe.ac.uk/eppiwebcontent/reel/review_groups/assessment/ass_rv1/ass_rv1

When passing tests is high stakes, teachers adopt a teaching style which emphasises transmission teaching of knowledge, thereby favouring those students who prefer to learn in this way and disadvantaging and lowering the self-esteem of those who prefer more active and creative learning experiences.

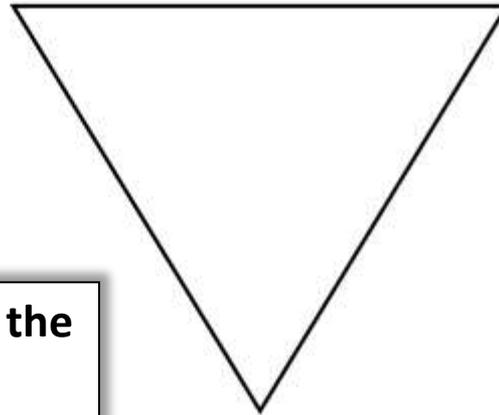


The more students are able to perform or answer, the more useful the assessment.

STANDARDIZED TEST	STANDARDS-BASED TEST
Norm-referenced; students are compared to a mark of a comparison or norm group	Criterion-referenced; students compared to the standards
All students are ranked; some have to “fail” or fall below the mean and some have to succeed or above the mean	All students can reach and achieve the standards
Constructed towards level of middle difficulty to spread out test scores; excludes items which many students answer well; deceptive indicator of school effectiveness	Includes items which many students excel in answering; finds out how all students have achieved standards
Items may not at all be actually taught in school; items based on background or native intellectual ability	 Items drawn from required standards; items allows free responses reflecting use of varied approaches

Observation

Interpretation



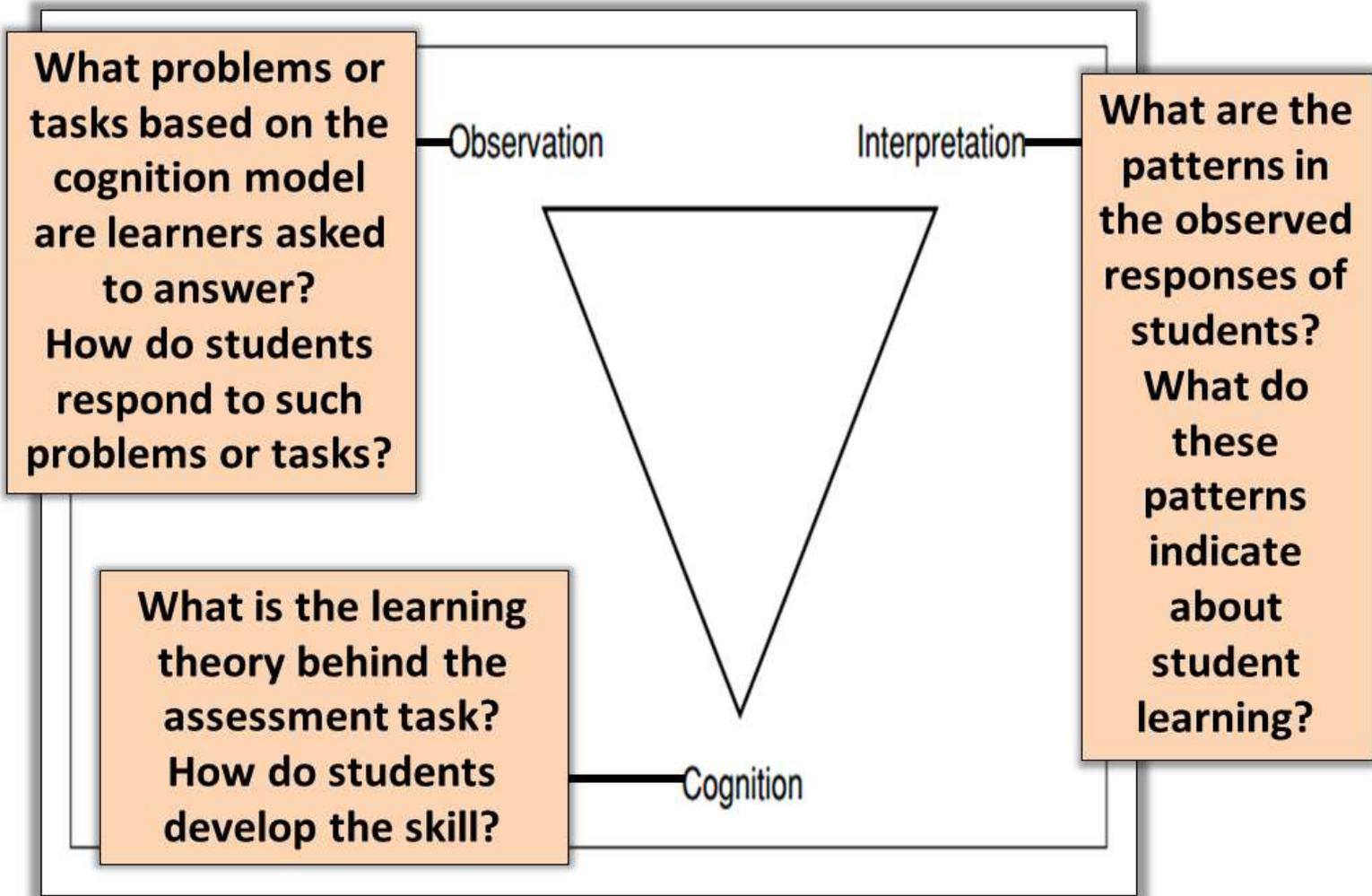
Cognition

“...assessment will be most effective if the designer (in many cases the teacher) starts with such an explicit and clearly

conceptualized cognitive model of learning.

This model should reflect the most scientifically credible understanding of typical ways in which learners represent knowledge and develop expertise in a domain.”

- (Pellegrino, Chudowsky, Glaser, 2001)



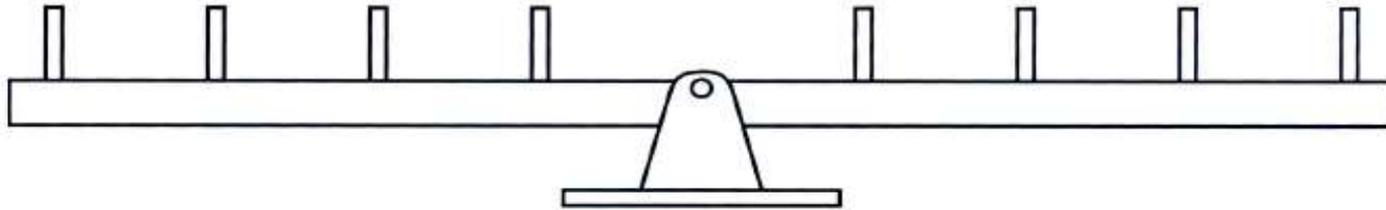
THE ASSESSMENT TRIANGLE

(Pellegrino, Chudowsky, Glaser, 2001)

**PURPOSE:
MAKES THE DESIGN AND RESULTS OF ASSESSMENT
MEANINGFUL AND RELEVANT**

COGNITION:

What is the learning theory behind the assessment task?
How do students develop the skill?



Two variables influence the outcome: (1) the amount of weight on each side of the fulcrum and (2) the distance of the weight from the fulcrum. Thus the keys to

Rule I—If the weight is the same on both sides, predict that the scale will balance. If the weight differs, predict that the side with more weight will go down.

Rule II—If one side has more weight, predict that it will go down. If the weights on the two sides are equal, choose the side with the greater distance (i.e., the side that has the weight farther from the fulcrum).

Rule III—If both weight and distance are equal, predict that the scale will balance. If one side has more weight or distance, and the two sides are equal on the other dimension, predict that the side with the greater value on the unequal dimension will go down. If one side has more weight and the other side more distance, muddle through or guess.

Rule IV—Proceed as in Rule III unless one side has more weight and the other more distance. In that case, calculate torques by multiplying weight times distance on each side. Then predict that the side with the greater torque will go down.

COGNITION MODEL

OBSERVATION:

What problems or tasks based on the cognition model are learners asked to answer?

How do students respond to such problems or tasks?

1. *Balance problems*—The same configuration of weights on pegs on each side of the fulcrum.

2. *Weight problems*—Unequal amounts of weights, equidistant from the fulcrum.

3. *Distance problems*—Equal amounts of weights, different distances from the fulcrum.

4. *Conflict-weight problems*—One side with more weight, the other side with its weight farther from the fulcrum, and the side with more weight goes down.

5. *Conflict-distance problems*—One side with more weight, the other side with more distance, and the side with more distance goes down.

6. *Conflict-balance problems*—The usual conflict between weight and distance, and the two sides balance.

SOURCE: Siegler (1976). Used by permission of Academic Press.

(Pellegrino, Chudowsky, Glaser, 2001)

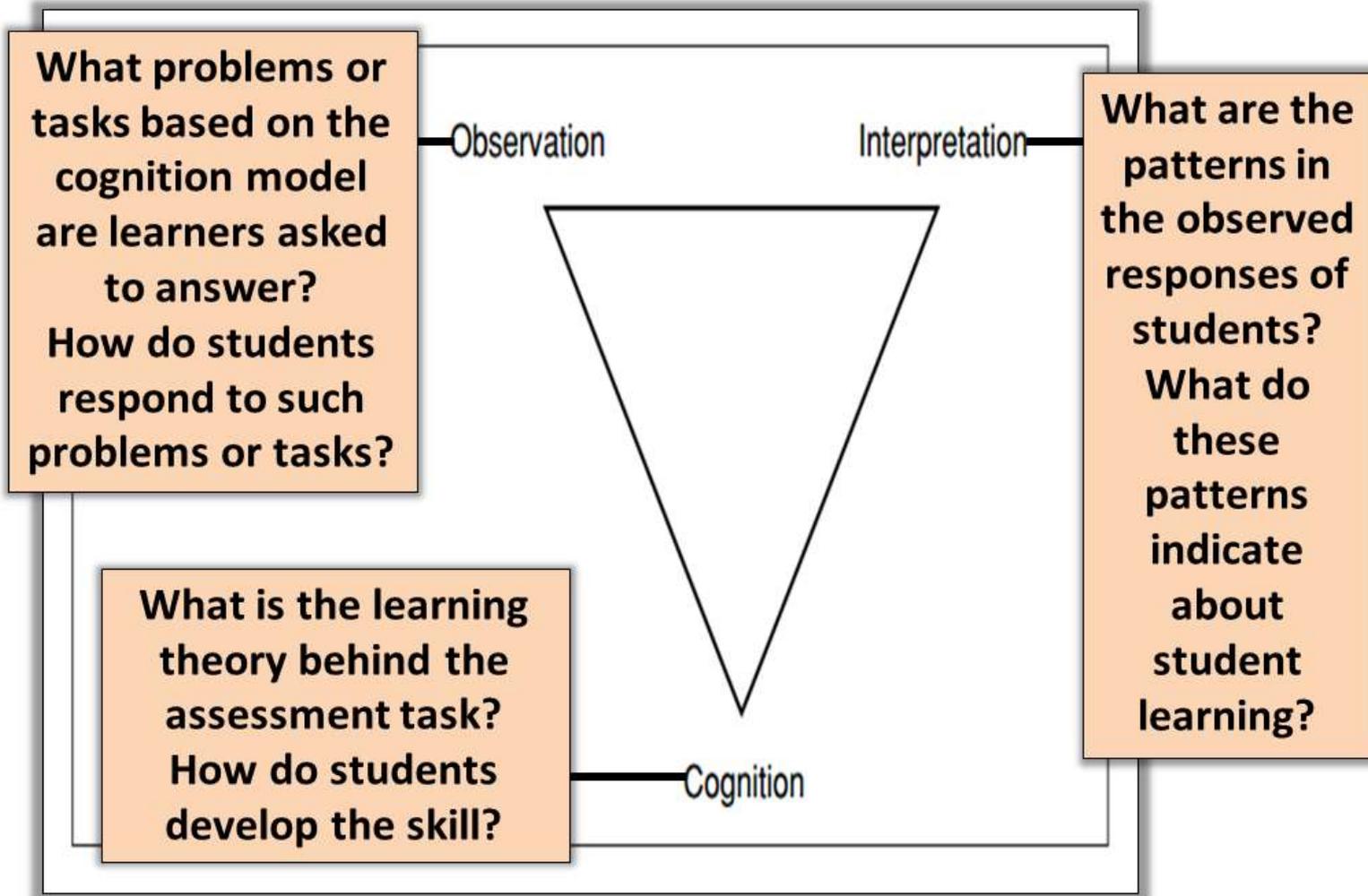
INTERPRETATION:

What are the patterns in the observed responses of students?
 What do these patterns indicate about student learning?

PROBLEM TYPE	RULE			
	I	II	III	IV
Balance 	100	100	100	100
Weight 	100	100	100	100
Distance 	0 (Should say "Balance")	100	100	100
Conflict-Weight 	100	100	33 (Chance Responding)	100
Conflict-Distance 	0 (Should say "Right Down")	0 (Should say "Right Down")	33 (Chance Responding)	100
Conflict-Balance 	0 (Should say "Right Down")	0 (Should say "Right Down")	33 (Chance Responding)	100

In a study of 5- to 17-year-olds solving balance-scale problems, Siegler found that more than 80 percent used one of the four rules consistently; the other 20 percent produced less consistent patterns of responses that did not match perfectly any of the above profiles. This finding may reflect an intermediate or transitional state of responding, which would not be unexpected in children's development.

SOURCE: Siegler (1976, p. 486). Used by permission of Academic Press.



THE ASSESSMENT TRIANGLE

(Pellegrino, Chudowsky, Glaser, 2001)

TO WHAT EXTENT IS THIS UTILIZED IN NATIONAL AND LOCAL ASSESSMENTS?



Unpacking the

STANDARDS

COGNITION:

What is the learning theory behind the assessment task?
How do students develop the skill?

K



Facts
Vocabulary
Definitions

U



Principles and
Generalizations
Big ideas of the
discipline

D



Processes
Skills



Differentiated Instruction
Carol Tomlinson

UNDERSTAND

Big Ideas



KNOW

Facts

DO

Skills



UNPACKING ASSESSMENT

FROM CONTENT AND PERFORMANCE STANDARDS:

A PHOTO ALBUM APPROACH

UNDERSTAND

How structures of parts
contribute to good health?

KNOW

Different parts of a cell?
Functions of parts?

DO

Care for one's body?
Practice healthy lifestyle?



STANDARD:

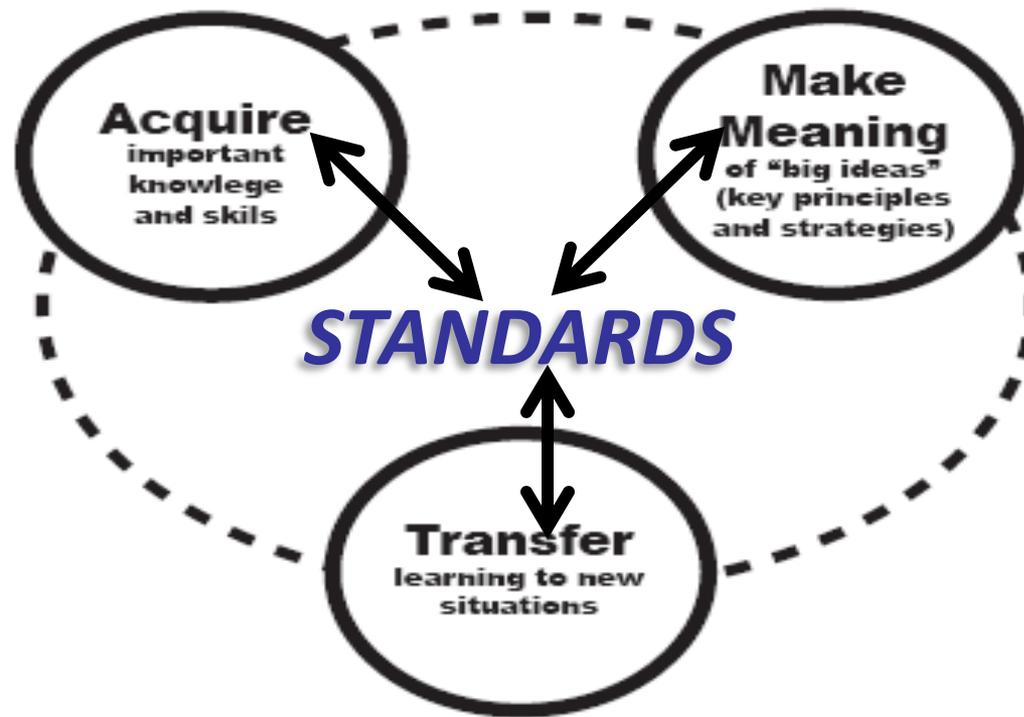
***Relate the parts of a cell and its functions
that enable people to live a healthy lifestyle and achieve well-being.***

Teaching and Learning for Understanding

What does it mean to teach and learn for understanding?

We have found it useful to consider this question by examining three distinct, yet interrelated, learning goals: 1) acquisition of new information and skill, 2) making meaning of that content (i.e., coming to understand), and 3) transfer of one's knowledge (i.e., applying one's learning to new situations).

These three categories link directly to elements identified in Understanding by Design. In Stage 1 teachers specify the knowledge and skill that they intend students to acquire. They also decide upon the "big ideas" they want students to come to understand and develop essential questions to help students make meaning of those ideas. In Stage 2, teachers develop performance tasks requiring transfer as evidence that students understand and can apply their knowledge in authentic contexts.



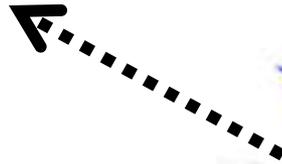
MAKING MEANING

Structures of parts
contribute to good health



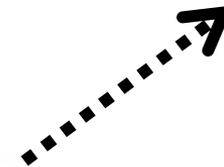
ACQUISITION

Different parts of a cell
Functions of parts



TRANSFER

Care for one's body
Healthy lifestyle



STANDARD:

Relate the parts of a cell and its functions

that enable people to live a healthy lifestyle and achieve well-being.

OBSERVATION:

What problems or tasks based on the cognition model are learners asked to answer?

How do students respond to such problems or tasks?

STANDARD:

Relate the parts of a cell and its functions

that enable people to live a healthy lifestyle and achieve well-being



Discuss what cell membranes are for and their importance to the human body.



ACQUISITION

The cell membrane is the outer protective wall of the cell. The cell membrane is flexible and porous so that it can receive various nutrients and discharge toxins thereby ensuring good health in the body.

MAKE
MEANING

TRANSFER

INTERPRETATION:

What are the patterns in the observed responses of students?
What do these patterns indicate about student learning?

STANDARD:

*Relate the parts of a cell and its functions
that enable people to live a healthy lifestyle and achieve well-being*



Discuss what cell membranes are for and their importance to the human body.

ACQUISITION	MAKING MEANING	TRANSFER
35/40 (88%)	10/40 (25%)	8/40 (20%)

Majority of students in class are able to define the cell membrane.
However, 25% are able to explain its importance and 20% are
able to connect this importance to real world situations.

INTERPRETATION:

What are the patterns in the observed responses of students?
What do these patterns indicate about student learning?

STANDARD:

*Relate the parts of a cell and its functions
that enable people to live a healthy lifestyle and achieve well-being*



Discuss what cell membranes are for and their importance to the human body.

ACQUISITION	MAKING MEANING	TRANSFER
35/40 (88%)	10/40 (25%)	8/40 (20%)

TEACHER'S NEXT STEPS:

Improve students' understanding and transfer.
Have students do more analysis of real world applications of the concept.

“Thus it is essential to recognize that one type of assessment does not fit all.



Often a single assessment is used for multiple purposes; in general, however, the more purposes a single assessment aims to serve, the more each purpose will be compromised.”

(Pellegrino, Chudowsky, Glaser, 2001)

DO 73:

KNOWLEDGE

PROCESS

UNDERSTANDING

PRODUCT/ PERFORMANCE

Traditional

Authentic

	On demand	----->		Over time
Formats	multiple choice, true/false, matching	constructed response, essays	investigations, research reports, projects	portfolios, journals, lab notebooks
Amount of time	typically ~1 min 2-3 min with justifications	1-2 min short answers 5-15 min open-ended responses	days, weeks, or months	months or even years
Whose questions? (audience for the answer)	anonymous or the teacher's	anonymous or the teacher's	the teacher's or the student's	the teacher's or the student's
What kind of questions?	posed narrowly	posed narrowly	posed more openly	varies
Source of answer	anonymous or the teacher's	the student's	the student's	the student's
What kind of answers?	right/wrong selected response	extent of correctness	standards or criteria for quality	standards or criteria for quality
Resources available during assessment	usually none	none or some equipment	equipment, references	equipment, references
Opportunity for feedback, revision	none	usually none	usually some from teachers and peers	usually some from teachers and peers

DO 8:

QUARTERLY ASSESSMENT

WRITTEN WORK

WRITTEN WORK PERFORMANCE TASK

Traditional

Authentic

	On demand	----->		Over time
Formats	multiple choice, true/false, matching	constructed response, essays	investigations, research reports, projects	portfolios, journals, lab notebooks
Amount of time	typically ~1 min 2-3 min with justifications	1-2 min short answers 5-15 min open-ended responses	days, weeks, or months	months or even years
Whose questions? (audience for the answer)	anonymous or the teacher's	anonymous or the teacher's	the teacher's or the student's	the teacher's or the student's
What kind of questions?	posed narrowly	posed narrowly	posed more openly	varies
Source of answer	anonymous or the teacher's	the student's	the student's	the student's
What kind of answers?	right/wrong	extent of correctness	standards or criteria for quality	standards or criteria for quality
Resources available during assessment	usually none	none or some equipment	equipment, references	equipment, references
Opportunity for feedback, revision	none	usually none	usually some from teachers and peers	usually some from teachers and peers

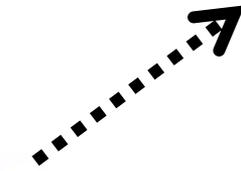
WRITTEN WORK

Structures of parts
contribute to good health



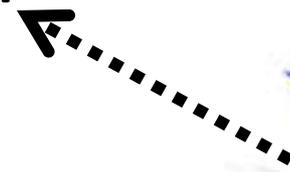
PERFORMANCE TASK

Care for one's body
Healthy lifestyle



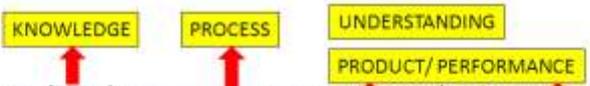
QUARTERLY ASSESSMENT

Different parts of a cell
Functions of parts



STANDARD:
*Relate the parts of a cell and its functions
that enable people to live a healthy lifestyle and achieve well-being.*

DO 73:



	Traditional		Authentic	
	On demand			Over time
Formats	multiple choice, true/false, matching	constructed response, essays	investigations, research reports, projects	portfolios, journals, lab notebooks
Amount of time	typically ~1 min 2-3 min with justifications	1-2 min short answers 5-15 min open-ended responses	days, weeks, or months	months or even years
Whose questions? (audience for the answer)	anonymous or the teacher's	anonymous or the teacher's	the teacher's or the student's	the teacher's or the student's
What kind of questions?	posed narrowly	posed narrowly	posed more openly	varies
Source of answer	anonymous or the teacher's	the student's	the student's	the student's
What kind of answers?	right/wrong selected response	extent of correctness	standards or criteria for quality	standards or criteria for quality
Resources available during assessment	usually none	none or some equipment	equipment, references	equipment, references
Opportunity for feedback, revision	none	usually none	usually come from teachers and peers	usually come from teachers

http://books.nyu.edu/html/inquiry_assessment/cht.html

RAPATAN2

DO 8:



	Traditional		Authentic	
	On demand			Over time
Formats	multiple choice, true/false, matching	constructed response, essays	investigations, research reports, projects	portfolios, journals, lab notebooks
Amount of time	typically ~1 min 2-3 min with justifications	1-2 min short answers 5-15 min open-ended responses	days, weeks, or months	months or even years
Whose questions? (audience for the answer)	anonymous or the teacher's	anonymous or the teacher's	the teacher's or the student's	the teacher's or the student's
What kind of questions?	posed narrowly	posed narrowly	posed more openly	varies
Source of answer	anonymous or the teacher's	the student's	the student's	the student's
What kind of answers?	right/wrong	extent of correctness	standards or criteria for quality	standards or criteria for quality
Resources available during assessment	usually none	none or some equipment	equipment, references	equipment, references
Opportunity for feedback, revision	none	usually none	usually come from teachers and peers	usually come from teachers and peers

11/11/2012

1/1



K-12 STANDARDS-BASED ASSESSMENT: A PHOTO ALBUM APPROACH

Learning Progressions and Proficiency Scales

- *Learning progressions* describe how students should develop increasingly sophisticated levels of understanding and expertise in an area of learning over time (Daro, Mosher, & Corcoran, 2011; Heritage, 2008; Nichols, 2010).
- *Proficiency scales* organize the CCSS into manageable and assessable learning progressions.

Generic Proficiency Scale

4.0	Complex learning goal
3.5	<i>In addition to 3.0 performance, partial success at score 4.0 content</i>
3.0	Target learning goal
2.5	<i>No major errors or omissions regarding 2.0 content, and partial success at 3.0 content</i>
2.0	Simpler learning goal
1.5	<i>Partial success at 2.0 content, and major errors or omissions regarding 3.0 content</i>
1.0	With help, partial success at 2.0 and 3.0 content
0.5	<i>With help, partial success at 2.0 content but not at 3.0 content</i>
0.0	Even with help, no success

Generic Proficiency Scale

4.0	Complex learning goal	INFERENCES, ORIGINAL INSIGHT OR WORK
3.5	<i>In addition to 3.0 performance, partial success at score 4.0 content</i>	
3.0	Target learning goal	REQUIRED COMPETENCY
2.5	<i>No major errors or omissions regarding 2.0 content, and partial success at 3.0 content</i>	
2.0	Simpler learning goal	FACTUAL KNOWLEDGE FOR COMPETENCY
1.5	<i>Partial success at 2.0 content, and major errors or omissions regarding 3.0 content</i>	
1.0	With help, partial success at 2.0 and 3.0 content	
0.5	<i>With help, partial success at 2.0 content but not at 3.0 content</i>	
0.0	Even with help, no success	

Themes and Central Ideas

Grade 7

Score 4.0	In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught.	
	<i>Score 3.5</i>	<i>In addition to score 3.0 performance, partial success at score 4.0 content</i>
Score 3.0	<p>The student will:</p> <ul style="list-style-type: none"> • Analyze the development of a theme or central idea over the course of a grade-appropriate text (RL.7.2; RI.7.2) • Provide an objective summary of a grade-appropriate text (RL.7.2; RI.7.2) 	
	<i>Score 2.5</i>	<i>No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content</i>
Score 2.0	<p>The student will recognize or recall specific vocabulary, such as:</p> <ul style="list-style-type: none"> • <i>Analyze, central idea, development, objective, summarize, summary, text, theme</i> <p>The student will perform basic processes, such as:</p> <ul style="list-style-type: none"> • Determine a theme or central idea of a grade-appropriate text (RL.7.2; RI.7.2) • Summarize a grade-appropriate text using a teacher-provided graphic organizer 	
	<i>Score 1.5</i>	<i>Partial success at score 2.0 content, and major errors or omissions regarding score 3.0 content</i>
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content	
	<i>Score 0.5</i>	<i>With help, partial success at score 2.0 content but not at score 3.0 content</i>
Score 0.0	Even with help, no success	

Themes and Central Ideas

Grade 7

Score 4.0	In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught.		EXCEEDS STANDARD
	Score 3.5	<i>In addition to score 3.0 performance, partial success at score 4.0 content</i>	
Score 3.0	<p>The student will:</p> <ul style="list-style-type: none"> Analyze the development of a theme or central idea over the course of a grade-appropriate text (RL.7.2; RI.7.2) Provide an objective summary of a grade-appropriate text (RL.7.2; RI.7.2) 		MEETS STANDARD
	Score 2.5	<i>No major errors or omissions regarding score 2.0 content, and partial success at score 3.0 content</i>	
Score 2.0	<p>The student will recognize or recall specific vocabulary, such as:</p> <ul style="list-style-type: none"> Analyze, central idea, development, objective, summarize, summary, text, theme <p>The student will perform basic processes, such as:</p> <ul style="list-style-type: none"> Determine a theme or central idea of a grade-appropriate text (RL.7.2; RI.7.2) Summarize a grade-appropriate text using a teacher-provided graphic organizer 		APPROACHES STANDARD WITH NO PROMPT
	Score 1.5	<i>Partial success at score 2.0 content, and major errors or omissions regarding score 3.0 content</i>	
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content		APPROACHES STANDARD WITH PROMPTS
	Score 0.5	<i>With help, partial success at score 2.0 content but not at score 3.0 content</i>	
Score 0.0	Even with help, no success		MISSES STANDARD

Each item is scored as:

- Completely correct (C)
- Completely incorrect (I)
- Partially correct (P)
- Some secondary teachers like low partial (LP) and high partial (HP)

1	KNOW (Level 2) Identify characteristics of main idea and supporting details	UNDERSTAND (Level 3) Explain relationship of stated or implied main Idea and supporting details	DO (Level 4) Write a text and show relationship of a stated or implied main idea with supporting details
DIAGNOSTIC			
FORMATIVE			
2 SUMMATIVE	<i>Post-test: Multiple Choice</i>	<i>Post-test: Text Analysis</i>	2 <i>Performance Task</i>
SELF-ASSESSMENT			

STANDARD: Analyze the main idea of a text and compose a text having a main idea and supporting details

DO 73

DISTRIBUTED SCHEDULE OF SUMMATIVE ASSESSMENTS			
SET B			
	Source Combo 1	Source Combo 2	Source Combo 3
KNOWLEDGE (including Technical Skills)	Summary of Long Tests for the Quarter	Quarterly Examination	Summary of Long Tests for the Quarter
PROCESS	Summary of Process Tests for the Quarter	Quarterly Examination	Quarterly Examination
UNDERSTANDING	Quarterly Examination	Summary of Understanding Tests for the Quarter	Quarterly Examination
PRODUCT	Summary of Performance Tasks	Summary of Performance Tasks	Summary of Performance Tasks

Assurance of Student Success in Summative Assessments via Multiple Formative Assessments

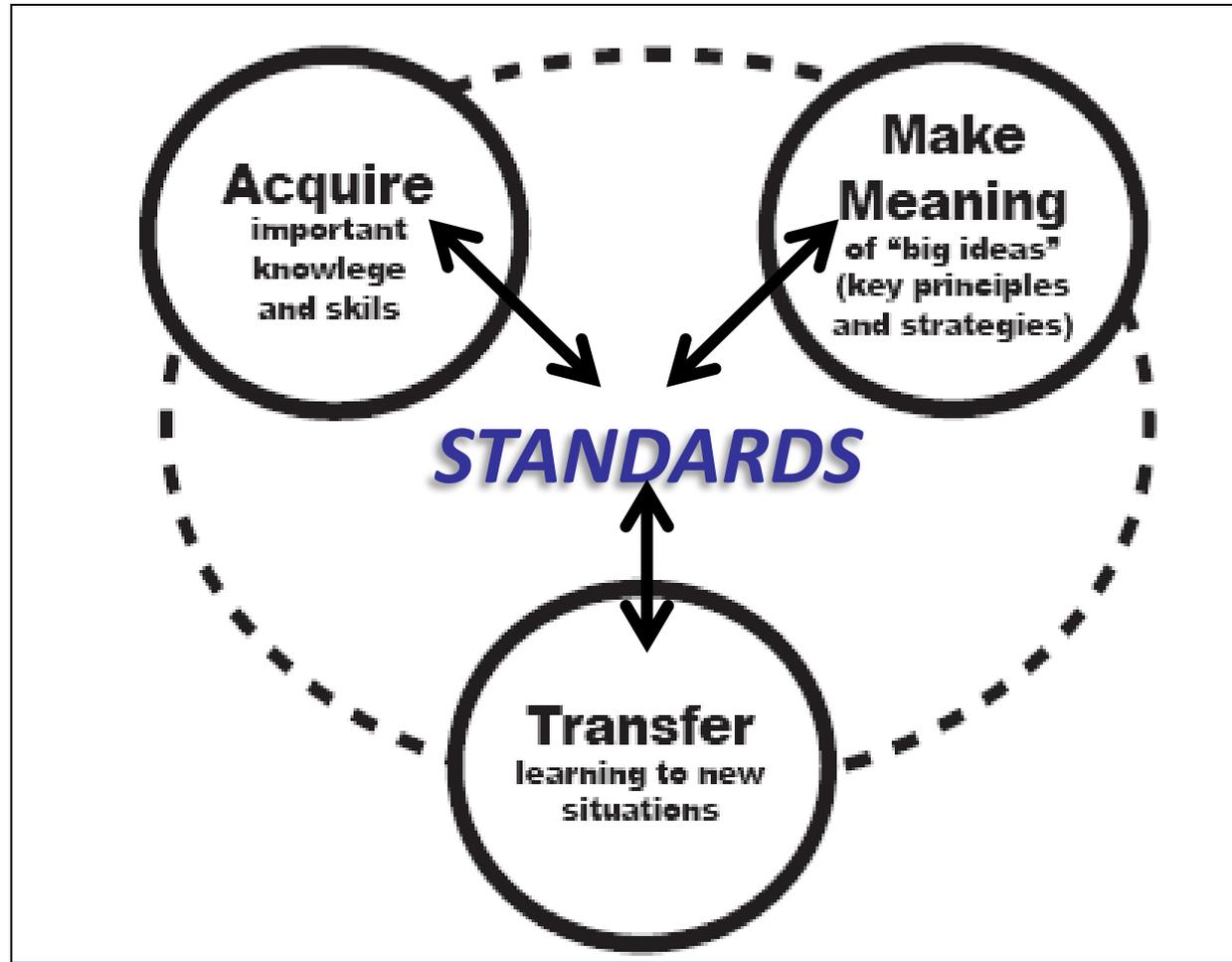
4911 & 3851, "Effective Supervision of Teaching to the 4 to 12 Standards" -- Handout no. 13

DO 8 COMPONENT	SCHEDULE
Quarterly Assessment	End of the Quarter
Written Work	End of the Topic or Unit
Performance Task	During Quarter End of a Lesson



**DISTRIBUTED APPROACHES:
MORE MANAGEABLE CONDUCT OF ASSESSMENT**

**SINCE STANDARDS-BASED ASSESSMENTS
OBTAIN PICTURES OF STUDENTS' PROFICIENCY,
HOW WILL FORMATIVE ASSESSMENTS BE DESIGNED?**



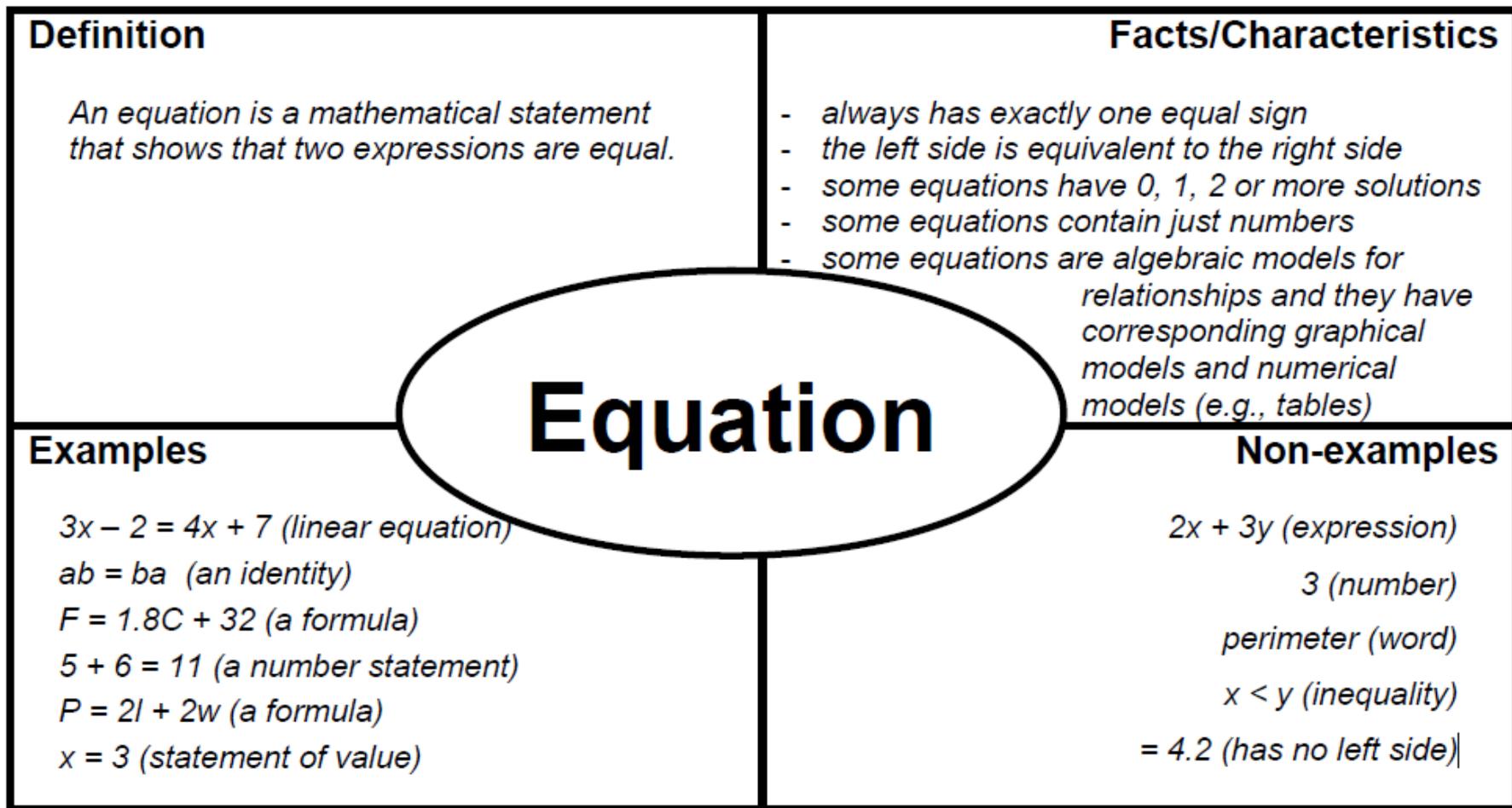
	KNOW (Level 2) Identify characteristics of main idea and supporting details	UNDERSTAND (Level 3) Explain relationship of stated or implied main Idea and supporting details	DO (Level 4) Write a text and show relationship of a stated or implied main idea with supporting details
1			
3	DIAGNOSTIC	?	?
4	FORMATIVE	?	?
	?	?	?
2			
	SUMMATIVE	<i>Post-test: Multiple Choice</i>	2 <i>Performance Task</i>
4	SELF-ASSESSMENT	?	?

STANDARD: Analyze the main idea of a text and compose a text having a main idea and supporting details

Determine what students have acquired in terms of knowledge and skills



**PURPOSES OF
FORMATIVE
ASSESSMENT**



Equation

What relationships do students form between these different ideas?

	KNOW (Level 2)	UNDERSTAND (Level 3)	DO (Level 4)
1	Identify characteristics of main idea and supporting details	Explain relationship of stated or implied main Idea and supporting details	Write a text and show relationship of a stated or implied main idea with supporting details
3	DIAGNOSTIC	<i>Pre-test: Multiple Choice</i>	<i>Pre-test: Text Analysis</i>
4	FORMATIVE	<i>Frayer Model Diagram</i>	
		<i>Word Analogy</i>	
2	SUMMATIVE	<i>Post-test: Multiple Choice</i>	2 <i>Performance Task</i>
4	SELF-ASSESSMENT		

STANDARD: Analyze the main idea of a text and compose a text having a main idea and supporting details

Identify gaps in understanding and correct misconceptions



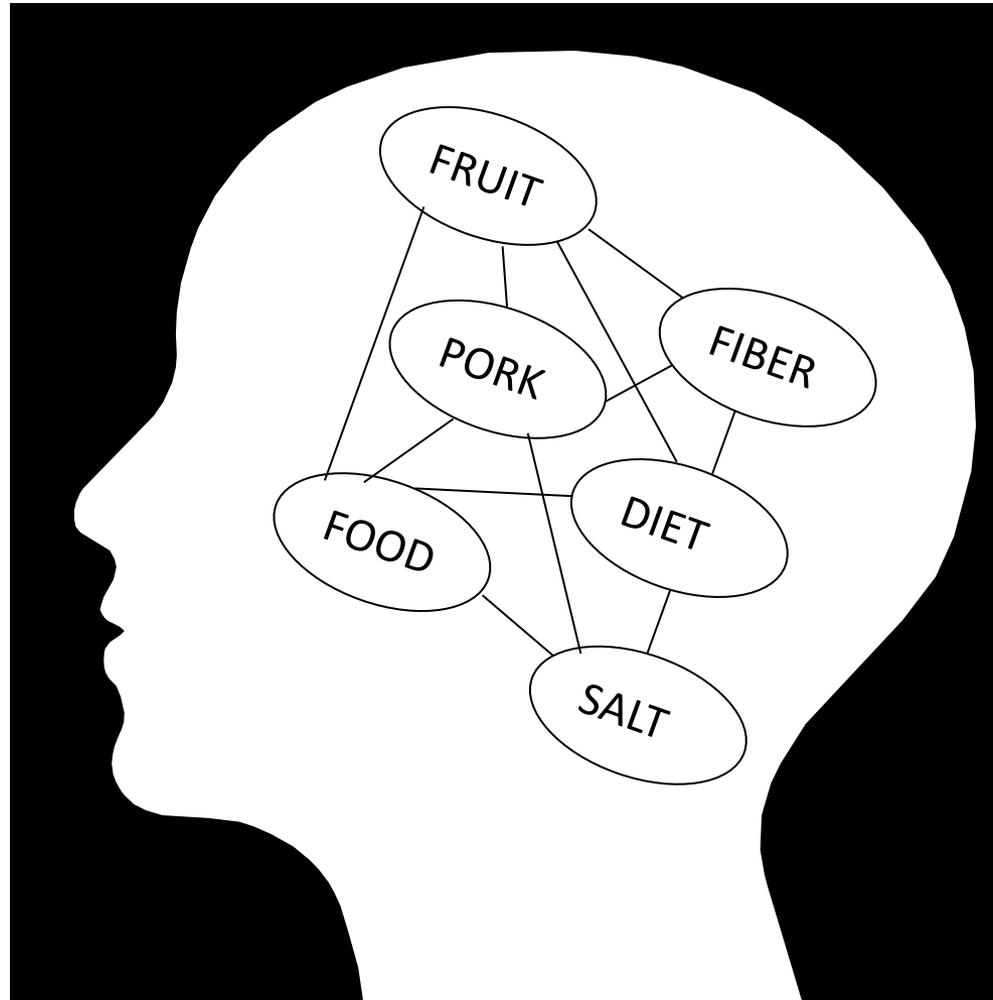
Determine what students have acquired in terms of knowledge and skills



PURPOSES OF FORMATIVE ASSESSMENT



To assess derives from the Latin verb **"assidere"**, to sit by (originally, as an assistant-judge in the context of taxes). Hence, in "assessment of learning" we "sit with the learner".



SCHEMA THEORY

1/2

3/6

“Consider a fifth grade boy who, researchers found, could flawlessly march through the steps of subtracting $2 \frac{5}{6}$ from $3 \frac{1}{3}$, ending up quite correctly with $\frac{3}{6}$ and then reducing that to $\frac{1}{2}$.

Unfortunately, successful performance of this final reduction does not imply understanding that the two fractions are equivalent. In fact, this student remarked in an interview that $\frac{1}{2}$ was larger than $\frac{3}{6}$ because "the denominator is smaller so the pieces are larger."

5/10

6/12

SAMPLE MAP OF CONCEPTUAL CHANGE

Activity No. 2: Anticipation-Reaction Guide

Write your response for each statement in the Before Lesson Column only.

Write **A** you if you agree with the statement.

Write **B** you if you disagree with the statement.

Before Lesson	Statements	After Lesson
	1. A pattern is formed when a set of shapes, numbers or designs are repeated over and over again.	
	2. To complete a continuing pattern, identify the pattern rule.	
	3. A sequence is arithmetic when it has a common ratio.	
	4. To continue an continuing pattern, determine the pattern rule.	
	5. A sequence is finite when the pattern will not continue.	
	6. Real-life patterns such as in money, sports, etc. can continue infinitely.	
	7. To get the n th term of an arithmetic sequence, use the formula $a_n = a_1 + (n - 1)d$.	
	8. Use the formula $s_n = n \frac{(a_1 + a_n)}{2}$ to get the sum of an arithmetic series when the first term and last terms are given.	

Click **SAVE** if you answered all the items above.

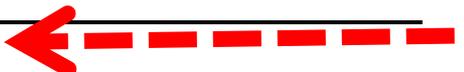
SAVE

SAMPLE MAP OF CONCEPTUAL CHANGE

IRF SHEET

ACTIVITY NO. 2: IRF SHEET

Let's begin by answering the "I" portion of the IRF Worksheet that you see below. Fill it up by writing your initial answer to the topical focus question. Click the save button after typing your answer.

IRF Worksheet	
Initial Answer	
Revised Answer	
Final Answer	

SAVE

SAMPLE MAP OF CONCEPTUAL CHANGE

KWHL Chart

K	W	H	L
What do we know?	What do we want to find out?	How can we find out what we want to learn?	What did we learn?
			
			

SAMPLE MAP OF CONCEPTUAL CHANGE

GENERALIZATION TABLE

MY INITIAL THOUGHTS	MY FINDINGS AND CORRECTIONS	SUPPORTING EVIDENCE	QUALIFYING EVIDENCE	MY GENERALIZATION

ERROR ANALYSIS

BOX 5-2 Manifestations of Some Subtraction Bugs

143 The student subtracts the smaller digit in each column from the larger digit
-28 regardless of which is on top.

125

143 When the student needs to borrow, s/he adds 10 to the top digit of the
-28 current column without subtracting 1 from the next column to the left.

125

1300 When borrowing from a column whose top digit is 0, the student writes 9
-522 but does not continue borrowing from the column to the left of the 0.

878

140 Whenever the top digit in a column is 0, the student writes the bottom digit
-21 in the answer; i.e., $0 - N = N$.

121

140 Whenever the top digit in a column is 0, the student writes 0 in the answer;
-21 i.e., $0 - N = 0$.

120

1300 When borrowing from a column where the top digit is 0, the student
-522 borrows from the next column to the left correctly, but writes 10 instead of
788 9 in this column.

321 When borrowing into a column whose top digit is 1, the student gets 10
-89 instead of 11.

231

662 Once the student needs to borrow from a column, s/he continues to
-357 borrow from every column whether s/he needs to or not.

205

662 The student always subtracts all borrows from the leftmost digit in the top
-357 number.

115

SOURCE: Brown and Burton (1978, p. 163). Used with permission of the Cognitive Science Society and by permission of the authors.

Determine what students have acquired in terms of knowledge and skills

Identify gaps in understanding and correct misconceptions

Locate where students are in a learning continuum and recommend next steps

**PURPOSES OF
FORMATIVE
ASSESSMENT**

**LEARNING
CONTINUUM**

TABLE 4-1 Sample Scoring Guide for the BEAR Assessment

Evidence and Trade-offs (ET) Variable		
	Using Evidence:	Using Evidence to Make Trade-offs:
Score	Response uses objective reason(s) based on relevant evidence to support choice.	Response recognizes multiple perspectives of issue and explains each perspective using objective reasons, supported by evidence, in order to make choice.
4	Response accomplishes Level 3 AND goes beyond in some significant way, such as questioning or justifying the source, validity, and/or quantity of evidence.	Response accomplishes Level 3 AND goes beyond in some significant way, such as suggesting additional evidence beyond the activity that would further influence choices in specific ways, OR questioning the source, validity, and/or quantity of evidence and explaining how it influences choice.
3	Response provides major objective reasons AND supports each with relevant and accurate evidence.	Response discusses at least two perspectives of issue AND provides objective reasons, supported by relevant and accurate evidence, for each perspective.
2	Response provides some objective reasons AND some supporting evidence, BUT at least one reason is missing and/or part of the evidence is incomplete.	Response states at least one perspective of issue AND provides some objective reasons using some relevant evidence, BUT reasons are incomplete and/or part of the evidence is missing; OR only one complete and accurate perspective has been provided.
1	Response provides only subjective reasons (opinions) for choice and/or uses inaccurate or irrelevant evidence from the activity.	Response states at least one perspective of issue BUT only provides subjective reasons and/or uses inaccurate or irrelevant evidence.
0	No response; illegible response; response offers no reasons AND no evidence to support choice made.	No response; illegible response; response lacks reasons AND offers no evidence to support decision made.
X	Student had no opportunity to respond.	

(Pellegrino, Chudowsky, Glaser, 2001)

Name: Brown, Amy				
	Designing and Conducting Investigations	Evidence and Tradeoffs	Understanding Concepts	Communicating Scientific Information
4 - Advanced				
3 - Correct	*		*	*
2 - Incomplete		*		
1 - Incorrect				
0 - Off Task				
To improve your performance, you can:	Think about the limits of your investigation	Be sure to include all major reasons for your choice	Think about other ways you could use the scientific information	Think of creative things you could add to your work to make it stand out, such as extra charts or pictures that are not required, use of color in graphs and charts, special labels, and so on
	Identify possible alternative procedures	Make sure you find all of the important evidence	Think about other scientific information that might be helpful	
	Think of new data displays	Make sure you've described at least two complete and accurate perspectives	Think about possible limitations of the scientific information provided	
	Explain any unexpected results			
	Think about additional investigations you could do			

MASTERY LEVELS

RECOMMENDATIONS

(Pellegrino, Chudowsky, Glaser, 2001)

	KNOW (Level 2) Identify characteristics of main idea and supporting details	UNDERSTAND (Level 3) Explain relationship of stated or implied main Idea and supporting details	DO (Level 4) Write a text and show relationship of a stated or implied main idea with supporting details
1			
3	DIAGNOSTIC	<i>Pre-test: Multiple Choice</i>	<i>Pre-test: Text Analysis</i>
4	FORMATIVE	<i>Fruyer Model Diagram</i>	<i>Text Diagramming</i>
		<i>Word Analogy</i>	<i>Think-Aloud</i>
		<i>IRF</i>	
2		<i>Error Analysis</i>	
	SUMMATIVE	<i>Post-test: Multiple Choice</i>	2 <i>Performance Task</i>
4	SELF-ASSESSMENT		

STANDARD: Analyze the main idea of a text and compose a text having a main idea and supporting details

Determine what students have acquired in terms of knowledge and skills

Identify gaps in understanding and correct misconceptions

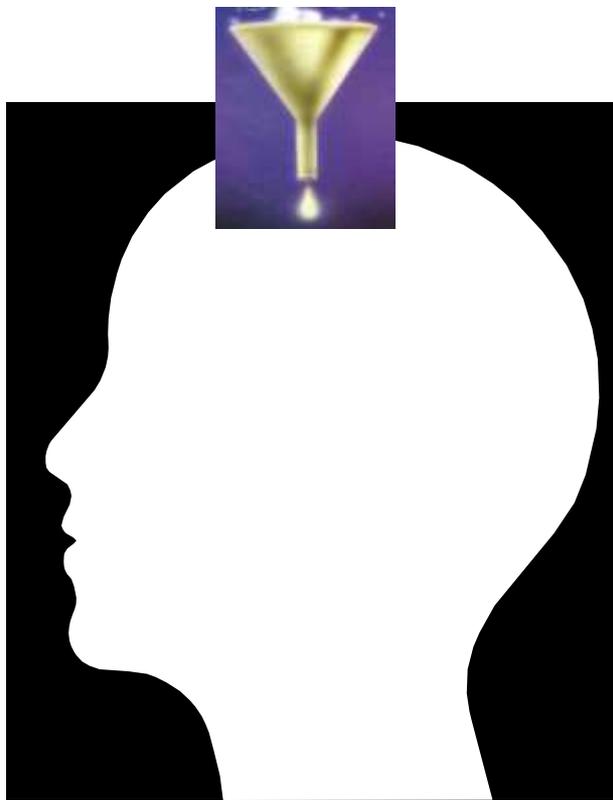
Locate where students are in a learning continuum and recommend next steps



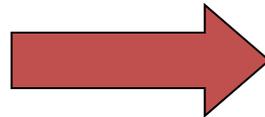
**PURPOSES OF
FORMATIVE
ASSESSMENT**

Provide feedback regarding performance of a standard and suggest areas for improvement

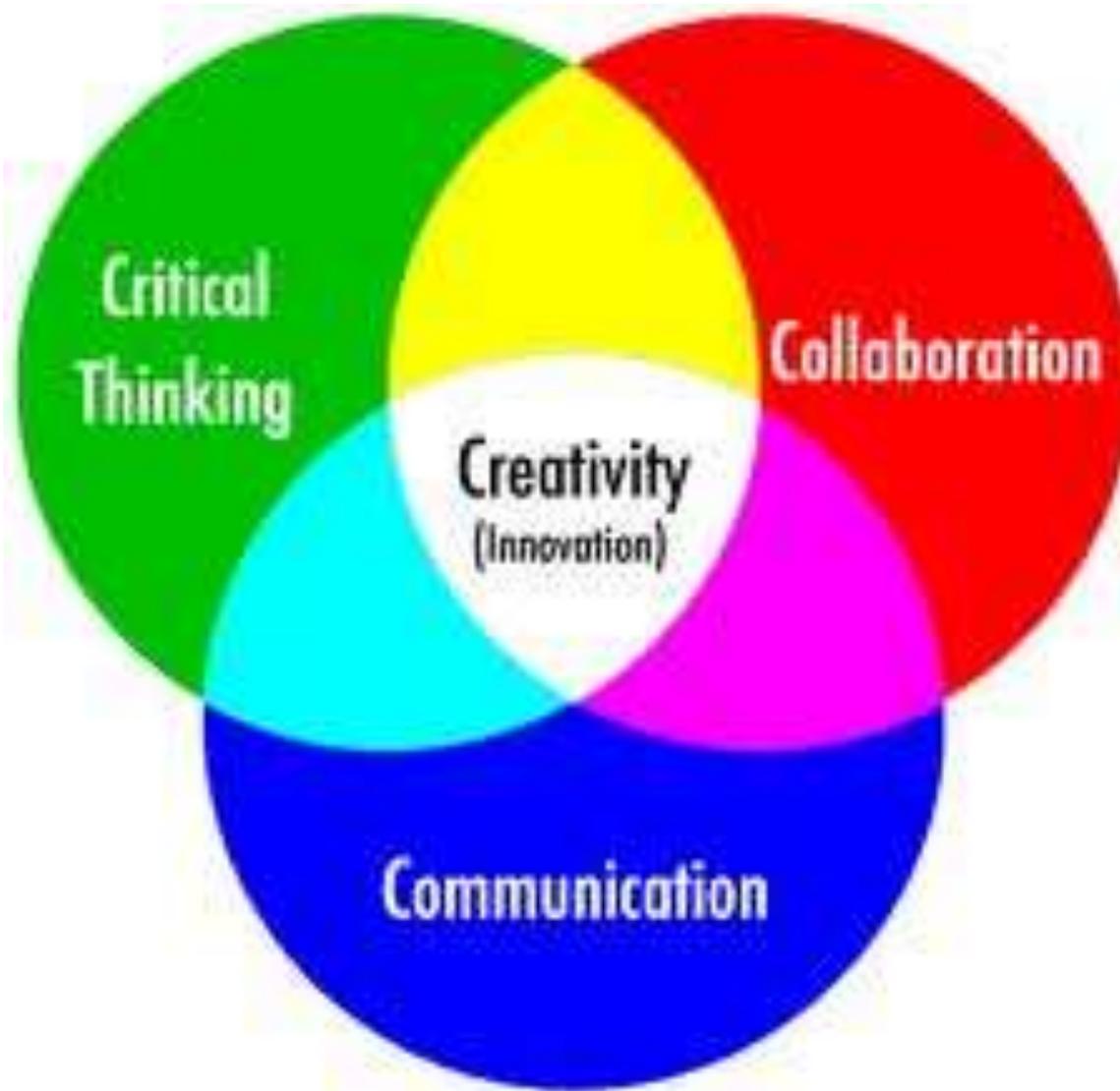




**CONTENT
MASTERY**



**PERFORMANCE
MASTERY**



USE OF AUTHENTIC PERFORMANCE TASKS

INTEGRATION OF 21st CENTURY SKILLS

Product/Performance

There is a dearth of religious vocations. As a religious priest/sister, you have been invited to speak in a conference on vocations to high school students. Your speech, accompanied by multi-media, should inform and enlighten the youth on this special vocation. You will be able to shed light on the vocation through your speech' impact, clarity, relevance, content, and the use of multi-media.

GOAL

ROLE

AUDIENCE

SITUATION

PRODUCT

STANDARDS

PERFORMANCE STANDARD:

The learner delivers an informative talk using multi-media to highlight important points.

TRANSFER GOAL:

Students on their own will be able to deliver an informative talk with multimedia to effectively convey ideas to different audiences.

**SAMPLE
AP
TRANSFER
SCAFFOLD**

ARALING PANLIPUNAN SCAFFOLD FOR TRANSFER

by Elsa Duyan Villanueva

+

<p>LEVEL 1 DIRECTED PROMPT</p>	<p>LEVEL 2 OPEN PROMPT</p>	<p>LEVEL 3 GUIDED TRANSFER</p>	<p>LEVEL 4 INDEPENDENT TRANSFER</p>
<p>1. <i>Inform the <u>students</u> the <u>skills</u> they are <u>expected</u> to <u>demonstrate</u>.</i></p> <p>2. <i>Provide <u>step-by-steo</u> instructions and how to do the skills and check their work.</i></p> <p>3. Provide task during Firm Up or Interaction stage.</p>	<p>1. <i>Provide students another task similar to that given in Level 1</i></p> <p>2. <i>Instead of giving a step-by-step instruction, ask students to do the steps on their own. If different procedures are given, ask students to choose which procedure they would use. Students may also be asked to vary the steps they learned.</i></p> <p>3. <i>Provide task during Firm Up or Interaction stage.</i></p>	<p>1. <i>Provide a real world situation where the skills taught in Levels 1-2 are applied.</i></p> <p>2. <i>Instead of directing the students step-by-step to use the skills they learned in previous levels, ask students to look back on the skills they learned and determine which of these they would use to meet the requirements of the given task.</i></p> <p>3. <i>provide task during Deepen or Interaction stage.</i></p>	<p>1. <i>Provide a real world situation similar to Level 3 where the skills taught in Levels 1-2 are applied.</i></p> <p>2. <i>Purposely refrain from suggesting to students to use the skills they learned in Levels 1-2. Have students on their own figure out which of the skills they learned in previous levels they would use to meet the standards in the given task.</i></p> <p>3. <i>Provide task during Transfer or Integration stage.</i></p>
<p>Activity 11: <u>Pagsusuri ng Editoriyal</u> 1. <u>Babasahin ng mga estudyante ang sample na editorial sa Hand-out 9.</u></p>	<p>Activity 15: <u>Practice News Editorial Article Writing (M,T)</u></p>	<p>Activity 19: <u>Practice Editorial Writing: (I) Bilang paghahanda sa</u></p>	<p>Activity 21: Performance Task – News Editorial Writing (I) <u>Ang mga balitang</u></p>

SCAFFOLD FOR TRANSFER

**STEP-BY-STEP
PROCESS
FOR SHOWING
UNDERSTANDING
AND
SKILLS
REQUIRED BY
TRANSFER TASK**

<p align="center">LEVEL 1 DIRECTED PROMPT</p> <p><i>1. Inform the students the skills they are expected to demonstrate.</i> <i>2. Provide step-by-step instruction on how to do the skills and check their work.</i> <i>3. Provide this task during Firm Up or Interaction stage.</i></p>	<p align="center">LEVEL 2 OPEN PROMPT</p> <p><i>1. Provide students another task similar to that given in Level 1.</i> <i>2. Instead of giving a step-by-step instruction, prompt the students to do the steps on their own. If different procedures are given, ask students to choose which procedure they would use. Students may also be asked to vary the steps they learned.</i> <i>3. Provide this task during Firm Up or Interaction stage.</i></p>	<p align="center">LEVEL 3 GUIDED TRANSFER</p> <p><i>1. Provide a real world situation where the skills taught in Levels 1- 2 are applied.</i> <i>2. Instead of directing the students step-by-step to use the skills they learned in previous levels, ask students to look back on the skills they learned and determine which of these they would use to meet the requirements of the given task.</i> <i>3. Provide this task during Deepen or Interaction stage.</i></p>	<p align="center">LEVEL 4 INDEPENDENT TRANSFER</p> <p><i>1. Provide a real world situation similar to Level 3 where the skills taught in Levels 1-2 are applied.</i> <i>2. Purposely refrain from suggesting to students to use the skills they learned in Levels 1-2. Have students on their own figure out which of the skills they learned in previous levels they would use to meet the standards in the given task.</i> <i>3. Provide task during Transfer or Integration stage.</i></p>
TASK:	TASK:	TASK:	TASK:
FORMATIVE	FORMATIVE	FORMATIVE	SUMMATIVE

**INDEPENDENT
PROCESS FOR
SHOWING
UNDERSTANDING
AND SKILLS
REQUIRED BY
TRANSFER
TASK**

**RECURRING UNDERSTANDING
AND SKILL(S) DONE
IN INCREASING LEVELS
OF COMPLEXITY**

UNPACKED STANDARDS FOR TRANSFER: Your work will be evaluated according to its **content, organization, delivery, use of visual aids and technology and practicality.**

ANALYTIC RUBRIC

CRITERIA	Outstanding 4	Satisfactory 3	Developing 2	Beginning 1	RATING
CATEGORY 1 <i>Practicality</i>	Presents the category in a manner beyond the satisfactory requirements.	Presents the category in a complete way according to the given requirements.	Presents the category in an incomplete way and shows only some of the given requirements.	Does not present the category's requirements at all.	
CATEGORY 2 <i>Content</i>	Presents the category in beyond the satisfactory requirements.	Presents the category	Presents the	Does not present the category's requirements at all.	
CATEGORY 3 <i>Organization</i>	Presents the category in beyond the satisfactory requirements.	according to the given requirements.	incomplete way and shows only some of the given requirements	Does not present the category's requirements at all.	
CATEGORY 4 <i>Delivery</i>	Presents the category in a manner beyond the satisfactory requirements.	Presents the category in a complete way according to the given requirements.	Presents the category in an incomplete way and shows only some of the given requirements	Does not present the category's requirements at all.	
<i>Visual Aids</i>				TOTAL	

ALIGNMENT OF CRITERIA WITH STANDARDS IN GRASPS AND TRANSFER GOAL

COMBINED WITH 21st CENTURY SKILLS

	KNOW (Level 2) Identify characteristics of main idea and supporting details	UNDERSTAND (Level 3) Explain relationship of stated or implied main Idea and supporting details	DO (Level 4) Write a text and show relationship of a stated or implied main idea with supporting details
1			
3	DIAGNOSTIC	<i>Pre-test: Multiple Choice</i>	<i>Pre-test: Text Analysis</i>
4	FORMATIVE	<i>Frayer Model Diagram</i>	<i>Text Diagramming</i>
		<i>Word Analogy</i>	<i>Writing Exercises</i>
		<i>Think-Aloud</i>	<i>Error Analysis</i>
		<i>Interactive Text Analysis</i>	<i>Peer Review</i>
2		<i>Error Analysis</i>	
	SUMMATIVE	<i>Post-test: Multiple Choice</i>	2 <i>Performance Task</i>
4	SELF-ASSESSMENT		

STANDARD: Analyze the main idea of a text and compose a text having a main idea and supporting details

Determine what students have acquired in terms of knowledge and skills

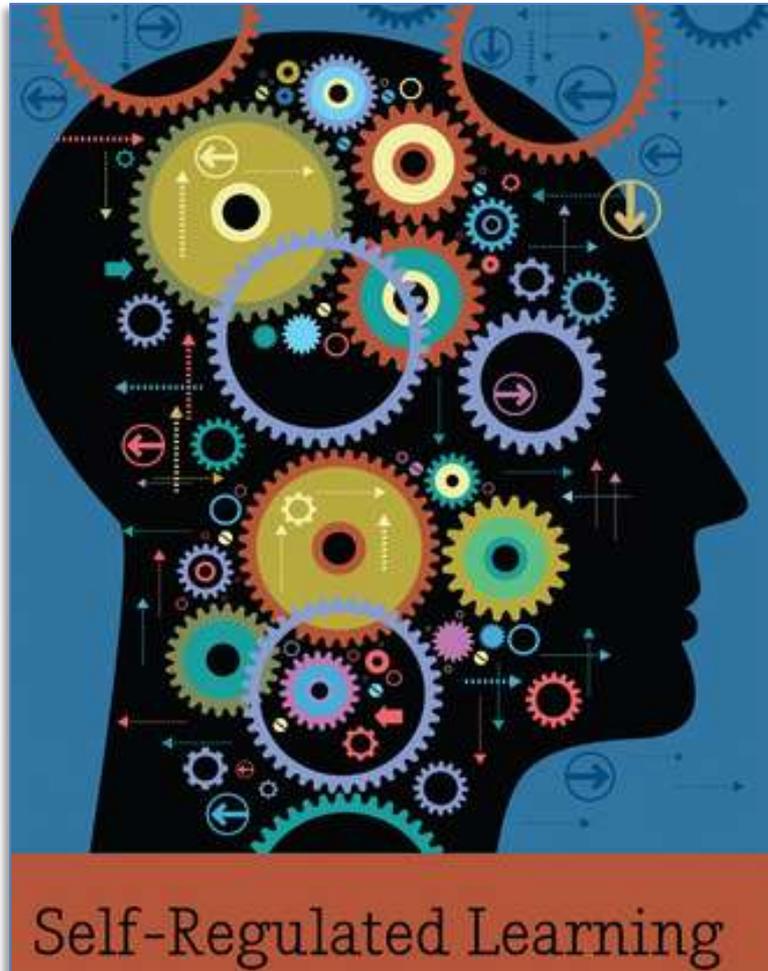
Identify gaps in understanding and correct misconceptions

Locate where students are in a learning continuum and recommend next steps

**PURPOSES OF
FORMATIVE
ASSESSMENT**

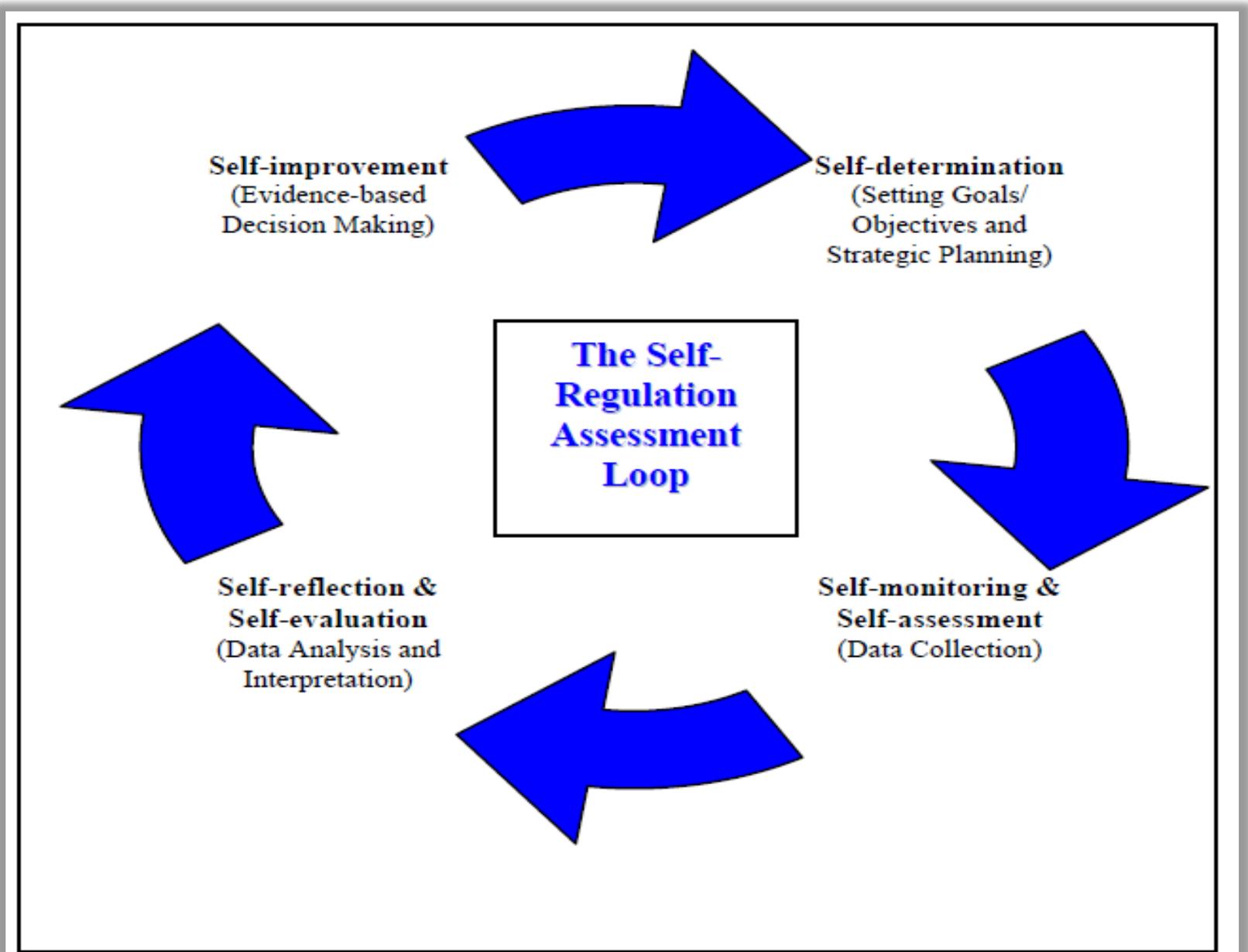
Help students engage in reflection and metacognition about the way they learn

Provide feedback regarding performance of a standard and suggest areas for improvement



“Self-regulation is an integrated learning process, consisting of the development of a set of constructive behaviors that affect one's learning. These processes are planned and adapted to support the pursuit of personal goals in changing learning environments.”

<http://www.gifted.uconn.edu/siegle/selfregulation/section2.html>



<http://www.howard.edu/assessment/about/conceptualframework.htm>

Fist of Five



Show the number of fingers on a scale, with 1 being lowest and 5 the highest.

Ask, How well do you feel you know this information?

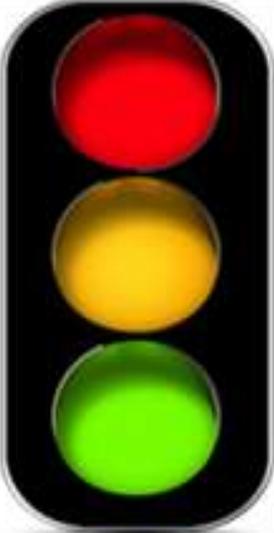
5. I know it so well I could explain it to anyone.
4. I can do it alone.
3. I need some help.
2. I could use more practice.
1. I am only beginning.



Gregory, G.H. & Chapman, C. (2001). *Differentiated Instructional Strategies: One Size Doesn't Fit All*. Thousand Oaks CA: Corwin Press.

ACTIVITY NO. 11: SKILLS READINESS CHECK:

Reflection to the level of your performance for this lesson. Check the color of the light that measures your understanding: Red - if you need more practice or activities, Yellow – 50% of the concepts understand, and Green – understand all and will be able to apply.

	RED - I still need more activities to understand all the concepts
	YELLOW - More than 50% of the concepts I fully understand
	GREEN – I understand all and will be able to apply

Before	Competencies	After
<i>Write your comments here</i>		<i>Write your comments here</i>
<i>I need to improve on this especially in my intonation and pitch control.</i>	Employ the appropriate prosodic features of speech	
	Use the correct and appropriate language when giving a toast or a tribute to someone and when delivering welcome and closing remarks	
	Deliver special speeches like toast and roast speeches, tributes, welcome and closing remarks, speeches to introduce guest speakers/resource persons etc. effectively in varied	
	Produce the sounds of English correctly and effectively	
	Use the correct stage stance and behavior when giving a roast and a toast and when paying tribute to someone in a eulogy	

SAMPLE LEARNING LOG

What happened?	
Key learning points:	How this experience connects with other learning:
Plan to use the learning in the future:	New learning needs now revealed:
Other points to note:	

The following questions can guide students in their reflections:

- What do I currently know or think I know about this topic?
- What value is it for my work in other classes and future work in this class?
- How does this relate to life outside of school?
- What questions do I have about this topic?
- What do I expect to learn studying this topic?
- How can I find out more information on this topic?
- What do the experts say?
- Has this made a difference somewhere else?

REFLECTION JOURNAL QUESTIONS



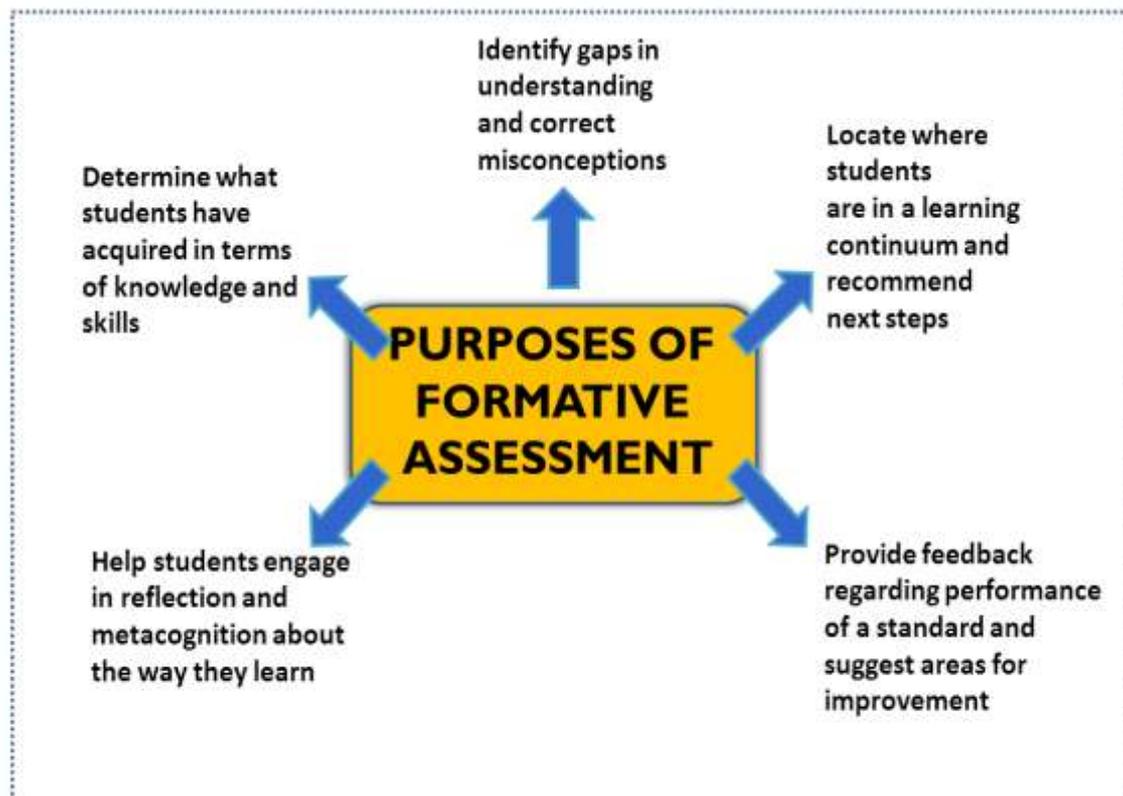


PORTFOLIO ASSESSMENT



	KNOW (Level 2) Identify characteristics of main idea and supporting details	UNDERSTAND (Level 3) Explain relationship of stated or implied main Idea and supporting details	DO (Level 4) Write a text and show relationship of a stated or implied main idea with supporting details
1			
3	DIAGNOSTIC	<i>Pre-test: Multiple Choice</i>	<i>Pre-test: Text Analysis</i>
4	FORMATIVE	<i>Frayer Model Diagram</i>	<i>Text Diagramming</i>
		<i>Word Analogy</i>	<i>Think-Aloud</i>
		<i>IRF</i>	<i>Error Analysis</i>
		<i>Peer Review</i>	
2		<i>Error Analysis</i>	
	SUMMATIVE	<i>Post-test: Multiple Choice</i>	2 <i>Performance Task</i>
4	SELF-ASSESSMENT	<i>Learning Log</i>	<i>Reflection Journal</i>
		<i>Writing Checklist</i>	<i>Portfolio</i>

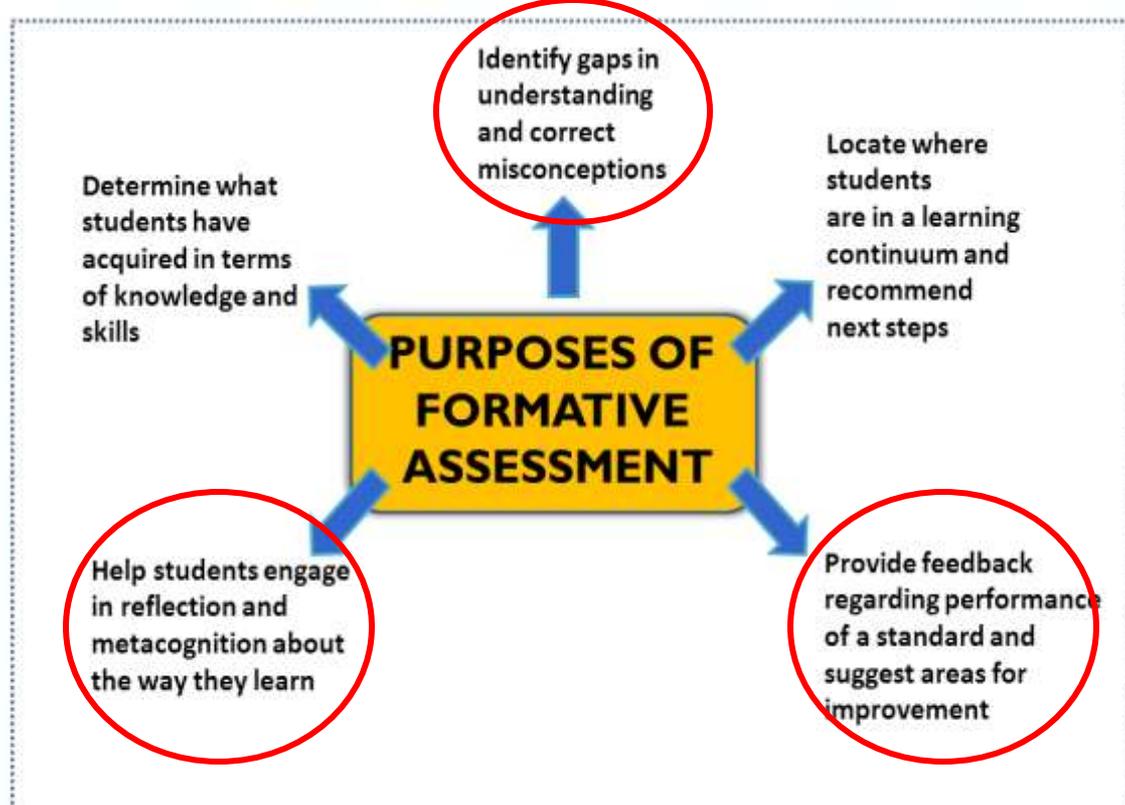
STANDARD: Analyze the main idea of a text and compose a text having a main idea and supporting details



**SAMPLE
DATA**

ACQUISITION	MAKING MEANING	TRANSFER
35/40 (88%)	10/40 (25%)	8/40 (20%)

***Given the above data,
what kind of formative assessments will a
teacher decide to use?***



**SAMPLE
DATA**

ACQUISITION	MAKING MEANING	TRANSFER
35/40 (88%)	10/40 (25%)	8/40 (20%)

TEACHER'S FORMATIVE ASSESSMENT INTERVENTIONS

Identify gaps in understanding and correct misconceptions

Error Analysis

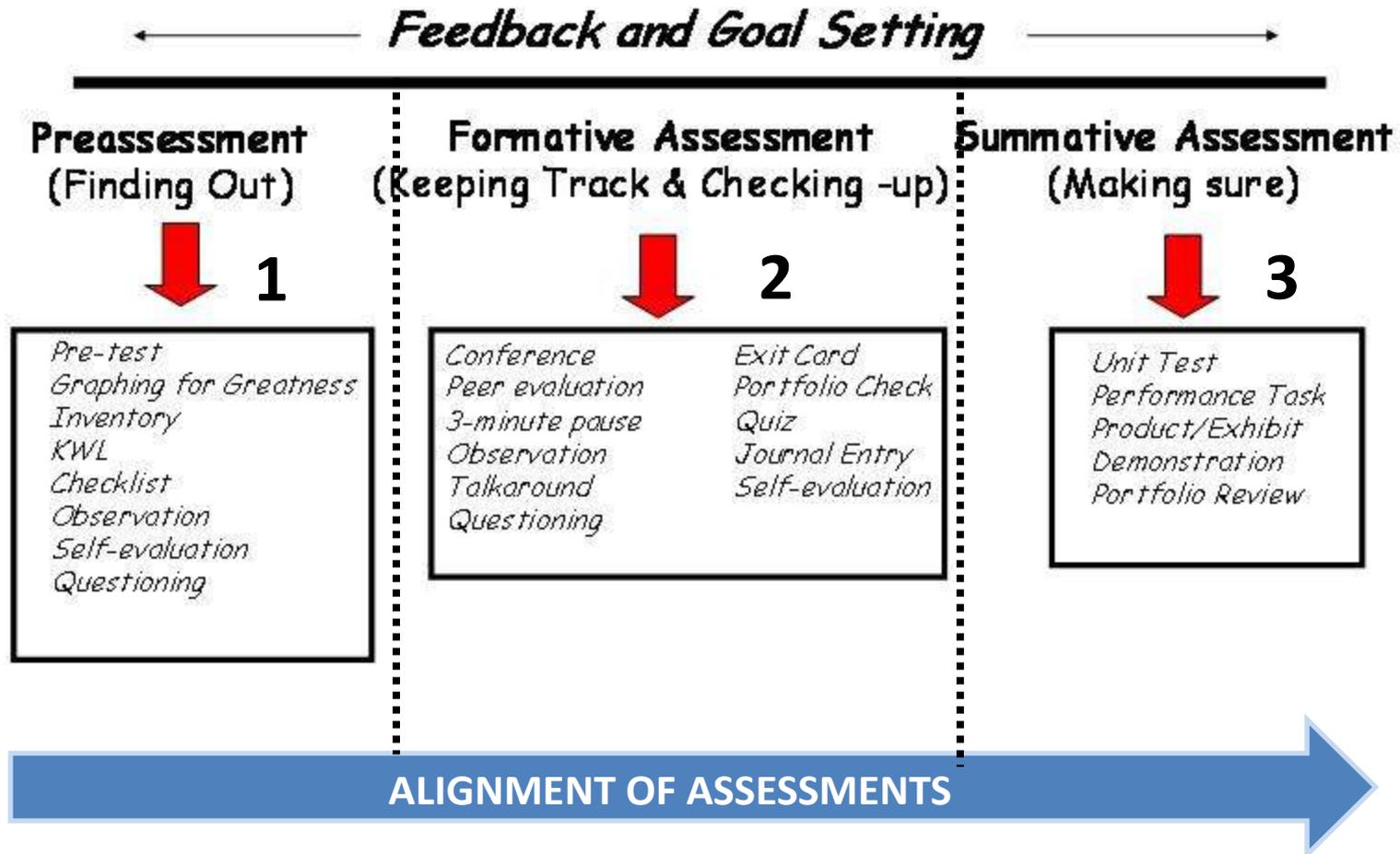
Provide feedback regarding performance

Application Exercises

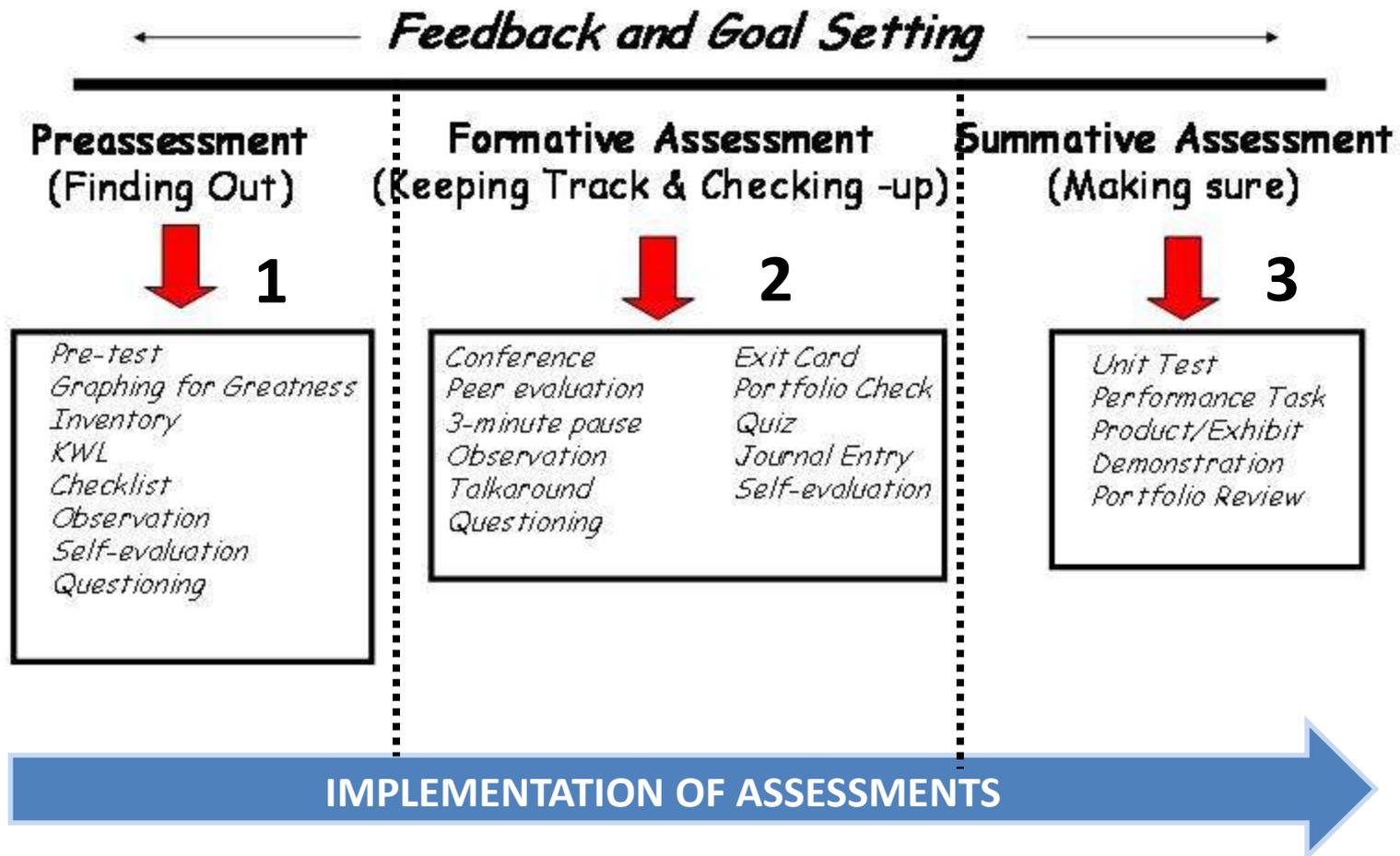
Help students engage in metacognition

Learning Logs

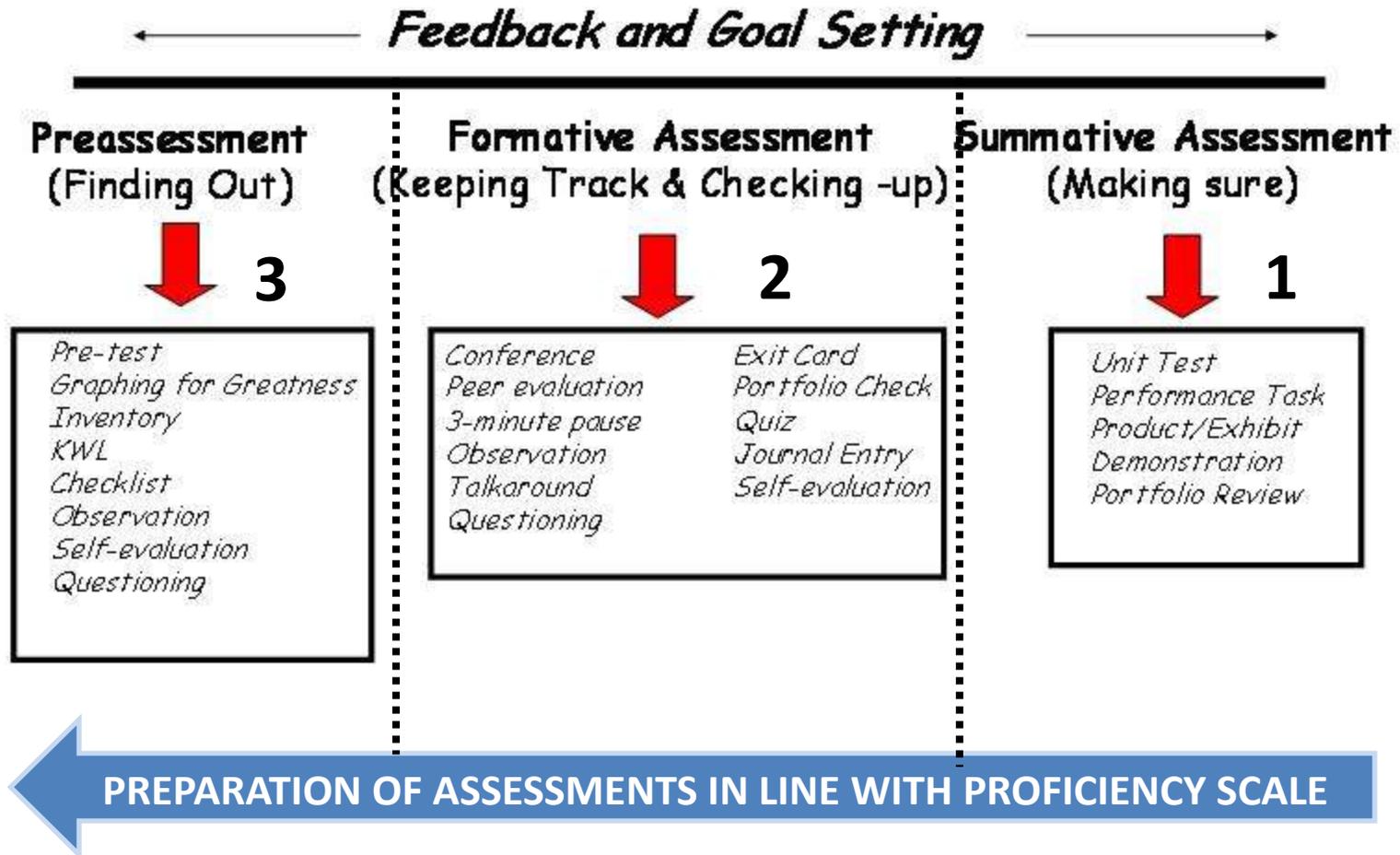
On-going Assessment: A Diagnostic Continuum



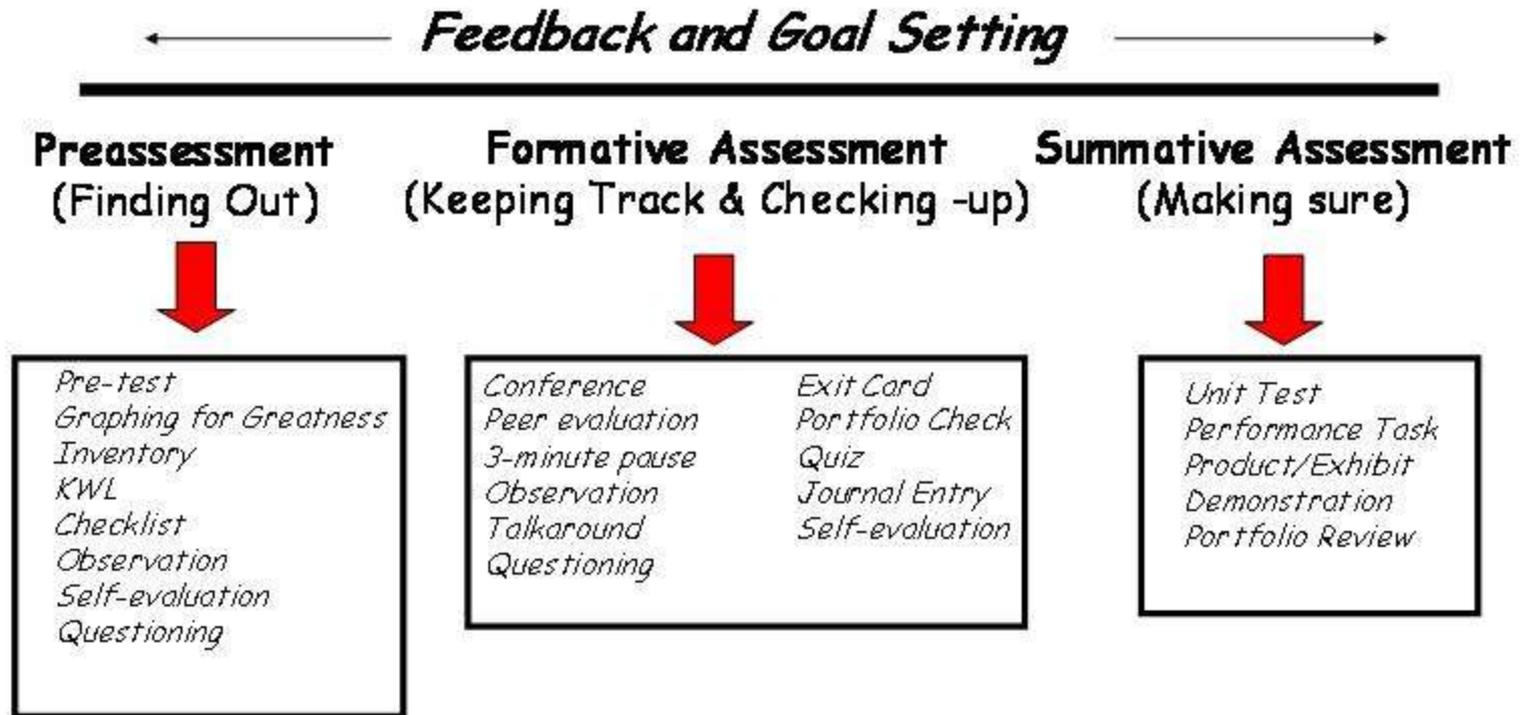
On-going Assessment: A Diagnostic Continuum



On-going Assessment: A Diagnostic Continuum



On-going Assessment: A Diagnostic Continuum



**“An assessment plan must come first,
not last, in the educational process”**
(Pellegrino, Chudowsky, Glaser, 2001)

DISTRIBUTED SCHEDULE OF SUMMATIVE ASSESSMENTS
SET B

	Source Combo 1	Source Combo 2	Source Combo 3
KNOWLEDGE (including Technical Skills)	Summary of Long Tests for the Quarter	Quarterly Examination	Summary of Long Tests for the Quarter
PROCESS	Summary of Process Tests for the Quarter	Quarterly Examination	Quarterly Examination
UNDERSTANDING	Quarterly Examination	Summary of Understanding Tests for the Quarter	Quarterly Examination
PRODUCT	Summary of Performance Tasks	Summary of Performance Tasks	Summary of Performance Tasks

Assurance of Student Success in Summative Assessments via Multiple Formative Assessments

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ALTHOUGH THERE ARE STATED WEIGHTS/ PERCENTAGES, NO GUIDANCE IS GIVEN ON WHAT CONSTITUTES PROFICIENCY

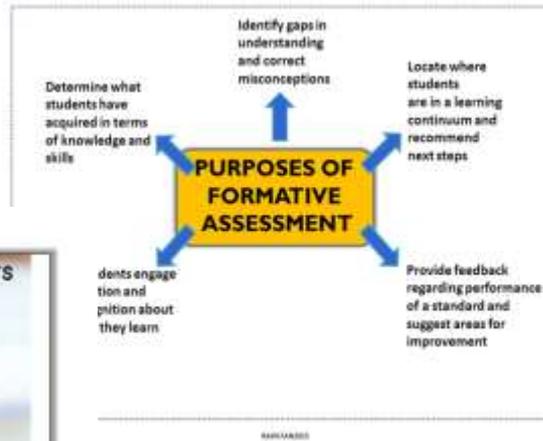
DO 8 COMPONENT	SCHEDULE
Quarterly Assessment	End of the Quarter
Written Work	End of the Topic or Unit
Performance Task	During Quarter End of a Lesson

DO 73

DISTRIBUTED SCHEDULE OF SUMMATIVE ASSESSMENTS
SET B

	Source Combo 1	Source Combo 2	Source Combo 3
KNOWLEDGE (Including Technical Skills)	Summary of Long Tests for the Quarter	Quarterly Examination	Summary of Long Tests for the Quarter
PROCESS	Summary of Process Tests for the Quarter	Quarterly Examination	Quarterly Examination
UNDERSTANDING	Quarterly Examination	Summary of Understanding Tests for the Quarter	Quarterly Examination
PRODUCT	Summary of Performance Tasks	Summary of Performance Tasks	Summary of Performance Tasks

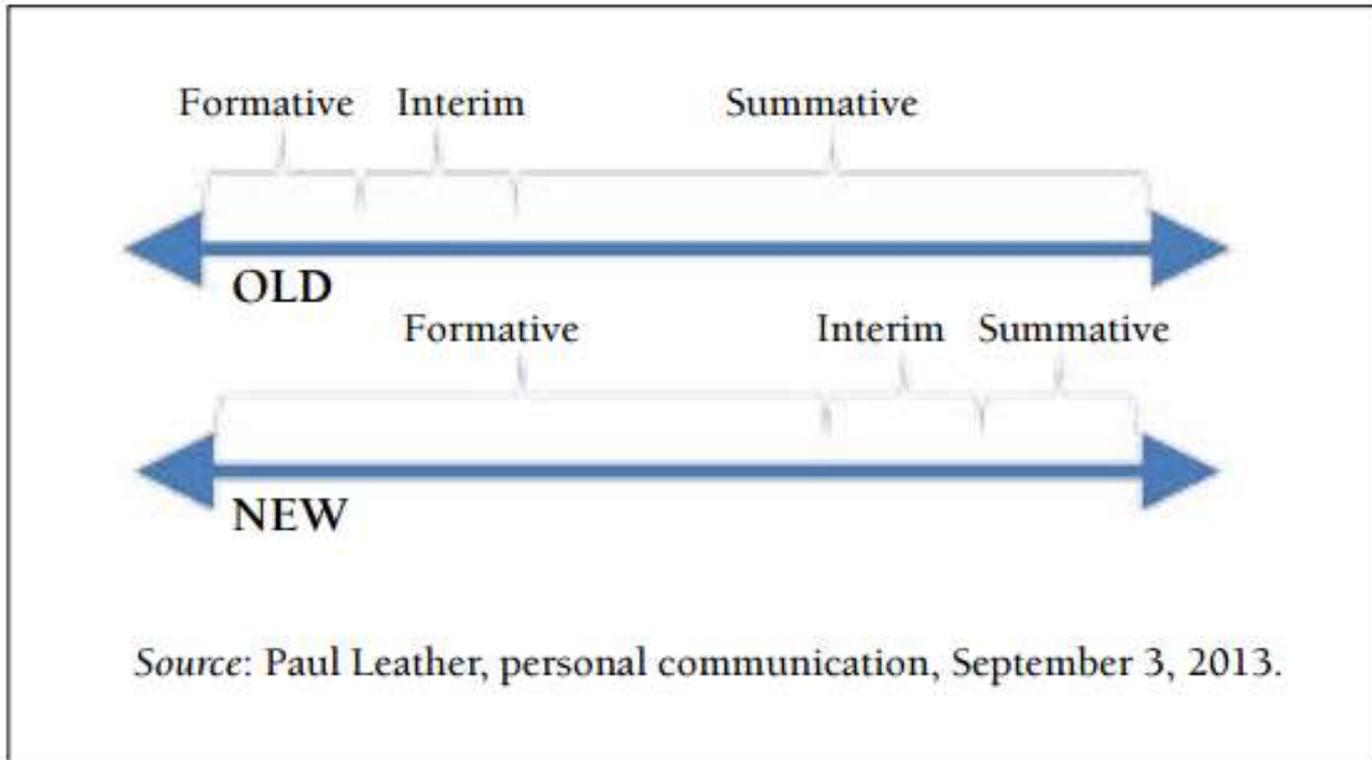
Assurance of Student Success in Summative Assessments via Multiple Forms



INTEGRATION OF ASSESSMENTS BASED ON LEARNING PROGRESSION AND PROFICIENCY

DO 8 COMPONENT	SCHEDULE
Quarterly Assessment	End of the Quarter
Written Work	End of the Topic or Unit
Performance Task	During Quarter End of a Lesson

FIGURE 9: Relative Emphasis on Assessment Purposes



https://edpolicy.stanford.edu/sites/default/files/publications/creating-systems-assessment-deeper-learning_0.pdf

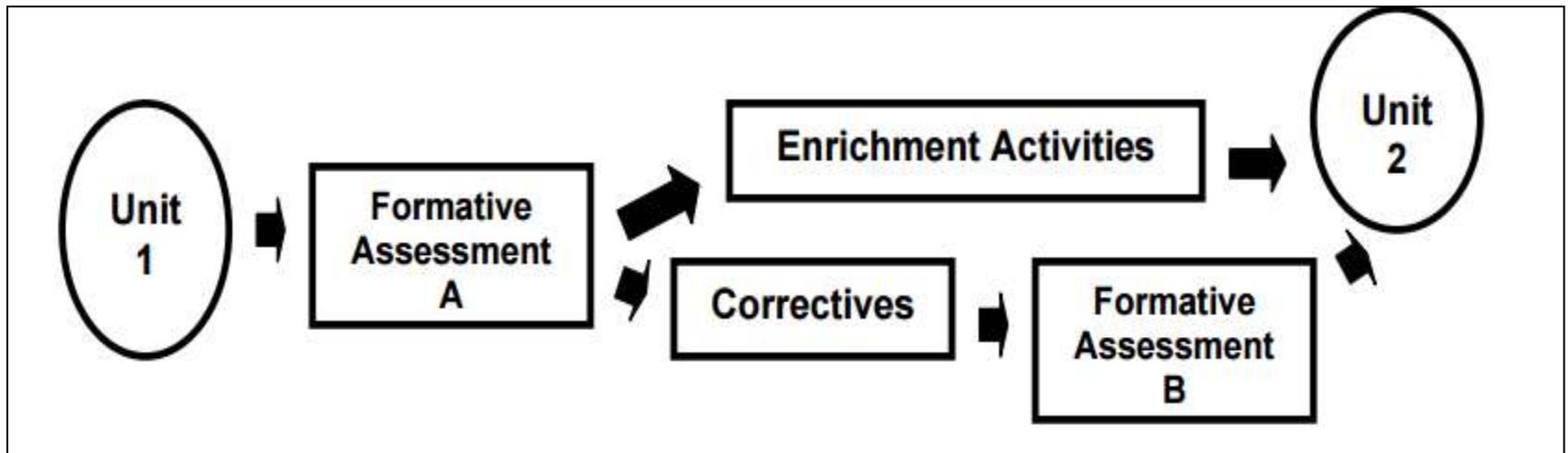
GRADE 10 ENGLISH QUARTER 2 UNIT ASSESSMENT MAP

TYPE	KNOWLEDGE AND PROCESS/ SKILLS (ACQUISITION)	UNDERSTANDING (MEANING MAKING)	TRANSFER
<i>PRE-ASSESSMENT/ DIAGNOSTIC</i>	Pre-test (NG)	I-R-F Chart (NG)	
<i>FORMATIVE ASSESSMENT</i>	POW + TREE Strategy (Sample Extemporaneous Speech) (NG)	Speech Writing (Extemporaneous Response) (NG)	Extemporaneous Speech Practice (NG)
	Sum It Up Chart (Sample Impromptu Speech) (NG)	Topic Analysis for Impromptu Response (NG)	Impromptu Speech Practice (NG)
	Venn Diagram (Impromptu vs. Extemporaneous Speech) (NG)	Donut Organizer (Summary Assessment on Extemporaneous and Impromptu Speeches) (NG)	
	DEFENDS Planning Sheet (Writing an Impromptu or Extemporaneous speech) (NG)	Debate (Combination of Impromptu and Extemporaneous Speeches) (NG)	Debate Simulation (NG)
		Error Analysis Exercise (NG)	
		Revisiting the I-R-F Chart (NG)	
<i>SUMMATIVE ASSESSMENT</i>	Post-test (G)	Revisiting the I-R-F Chart (NG)	Performance Tasks: -Extemporaneous Speech -Impromptu Speech -Debate (G)
		Speech Error Analysis (G)	
<i>SELF-ASSESSMENT</i>	Checklist of Unit Competencies (NG)	Learning Log (NG)	

UNIT ASSESSMENT MAP

DOMINANCE OF ASSESSMENT FOR LEARNING





BENJAMIN BLOOM'S MASTERY LEARNING INSTRUCTIONAL PROCESS

I find great emphasis on problem solving, applications of principles, analytical skills, and creativity. Such higher mental processes are emphasized because this type of learning enables the individual to relate his or her learning to the many problems he or she encounters in day-to-day living.

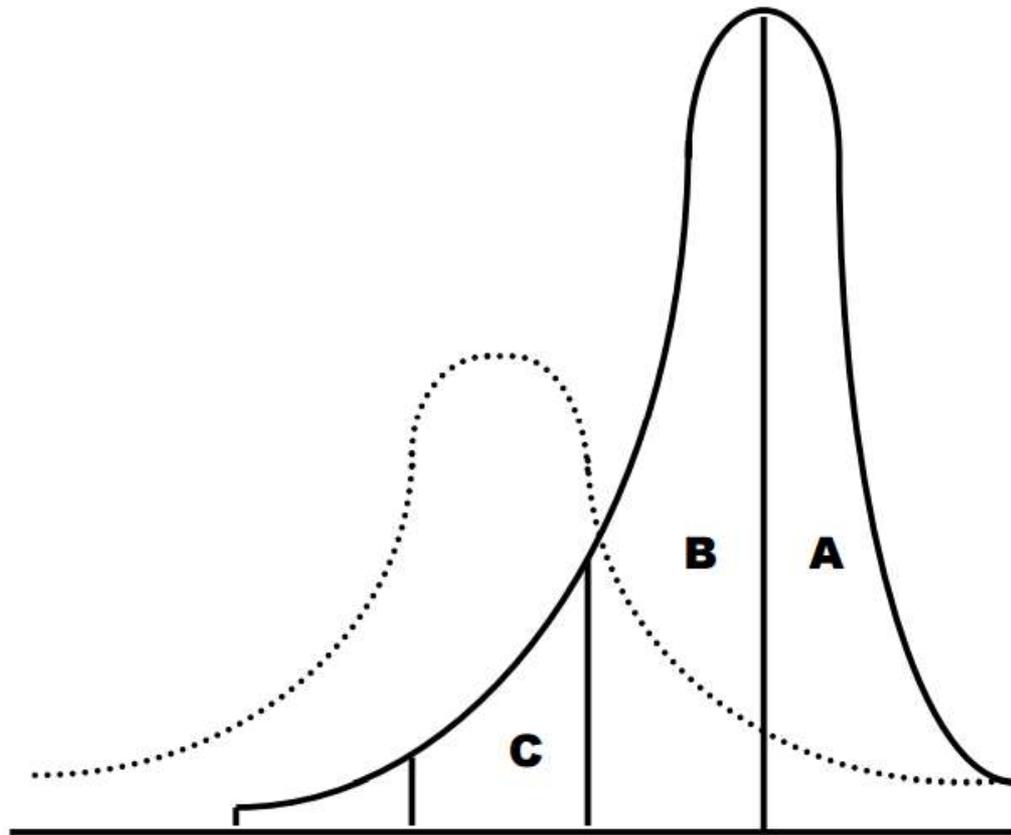


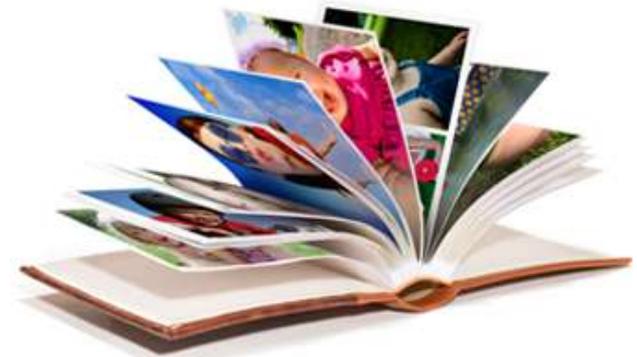
Figure 3. Distribution of Achievement in Mastery Learning Classrooms

**GREATER VARIATION IN CORRECTIVES ALIGNED WITH FORMATIVE ASSESSMENTS,
LESSER VARIATION IN LEARNING**

GRADE 10 ENGLISH QUARTER 2 UNIT ASSESSMENT MAP

TYPE	KNOWLEDGE AND PROCESS/ SKILLS (ACQUISITION)	UNDERSTANDING (MEANING MAKING)	TRANSFER
<i>PRE-ASSESSMENT/DIAGNOSTIC</i>	Pre-test (NG)	I-R-F Chart (NG)	
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	Sum It Up Chart (Sample Impromptu Speech) (NG)	Topic Analysis for Impromptu Response (NG)	Impromptu Speech Practice (NG)
	Venn Diagram (Impromptu vs. Extemporaneous Speech) (NG)	Donut Organizer (Summary Assessment on Extemporaneous and Impromptu Speeches) (NG)	
	DEFENDS Planning Sheet (Writing an Impromptu or Extemporaneous speech) (NG)	Debate (Combination of Impromptu and Extemporaneous Speeches) (NG)	Debate Simulation (NG)
		Error Analysis Exercise (NG)	
		Revisiting the I-R-F Chart (NG)	
<i>SUMMATIVE ASSESSMENT</i>	Post-test (G)	Revisiting the I-R-F Chart (NG)	Performance Tasks: -Extemporaneous Speech -Impromptu Speech -Debate (G)
		Speech Error Analysis (G)	
<i>SELF-ASSESSMENT</i>	Checklist of Unit Competencies (NG)	Learning Log (NG)	

VARIED AND FREQUENT
 ↑
 FORMATIVE,
 ↑
 SUMMATIVE RESULTS



Common Characteristics of High Achievement Schools

Our research on the 90/90/90 Schools included both site visits and analyses of accountability data. The site visits allowed us to conduct a categorical analysis of instructional practices. In the same manner that the authors of *In Search Of Excellence* (Peters and Waterman, 1982) identified the common practices of excellent organizations, we sought to identify the extent to which there was a common set of behaviors exhibited by the leaders and teachers in schools with high achievement, high minority enrollment, and high poverty levels. As a result, we found five characteristics that were common to all “90/90/90 Schools.” These characteristics were:

- A focus on academic achievement
- Clear curriculum choices
- Frequent assessment of student progress and multiple opportunities for improvement
- An emphasis on nonfiction writing
- Collaborative scoring of student work

Effects of formative assessment

Standardized effect size: differences in means, measured in population standard deviations

Source	Effect size
Kluger & DeNisi (1996)	0.41
Black & Wiliam (1998)	0.4 to 0.7
Wiliam <i>et al.</i> , (2004)	0.32
Hattie & Timperley (2007)	0.96
Shute (2008)	0.4 to 0.8

Effects of formative assessment

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Hattie & Timperley (2007)	0.96
Shute (2008)	0.4 to 0.8

“Quantitative claims for the efficacy of formative assessment should be viewed with caution.”

(Bennet, 2009)

Effects of formative assessment

Standardized effect size: differences in means, measured in population standard deviations

Source	Effect size
Kluger & DeNisi (1996)	0.41
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Shute (2008)	0.4 to 0.8

Problems in construct definition and wide variation in methods

Practical Assessment, Research & Evaluation

A peer-reviewed electronic journal.

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Volume 14, Number 7, March 2009

ISSN 1531-7714

A Critical Review of Research on Formative Assessment: The Limited Scientific Evidence of the Impact of Formative Assessment in Education

Karee E. Dunn & Sean W. Malvenon
University of Arkansas

The existence of a plethora of empirical evidence documenting the improvement of educational outcomes through the use of formative assessment is conventional wisdom within education. In reality, a limited body of scientifically based empirical evidence exists to support that formative assessment directly contributes to positive educational outcomes. The use of formative assessments, or other diagnostic efforts within classrooms, provides information that should help facilitate improved pedagogical practices and instructional outcomes. However, a review of the formative assessment literature revealed that there is no agreed upon lesson with regard to formative assessment and suspect methodological approaches in the efforts to demonstrate positive effects that could be attributed to formative assessments. Thus, the purpose of this article was two-fold. First, the authors set out to clarify the terminology related to formative assessment and its usage. Finally, the article provides a critical analysis of the seminal literature on formative assessment, beginning with Black and Wiliam (1998), and extending through current published materials.

<http://pareonline.net/pdf/v14n7.pdf>

Source	Effect size
Kluger & DeNisi (1996)	0.41
Black & Wiliam (1998)	0.4 to 0.7
Wiliam <i>et al.</i> , (2004)	0.32
Hattie & Timperley (2007)	0.96
Shute (2008)	0.4 to 0.8

Potentially promising but more research is needed to determine best practices of formative assessment.

-Dunn & Malvenon, 2009



CHALLENGES AND RESPONSES

A word cloud of educational terms. The most prominent words are 'Assessment' and 'Formative' in large orange and red fonts. Other words include 'Instruction' (vertical on the right), 'Progress', 'Authentic', 'Reflect', 'Support', 'Modify', 'Understand', 'Relevant' (vertical on the left), 'Meaningful', 'Purposeful', 'Improve' (vertical), and 'Inform'.

1

Teachers need to be skilled in unpacking the standards in order to identify the proficiency targets.

UNPACK BY ANALYZING AND DISCUSSING

Grade 4 – Earth and Space FOURTH QUARTER/FOURTH GRADING PERIOD			
<i>Content</i>	<i>Content Standards</i>	<i>Performance Standards</i>	<i>Learning Competencies</i>
<ul style="list-style-type: none"> ▪ Soil <ul style="list-style-type: none"> - Types of soil according to size of particles and ability to hold water (sand, silt and clay) - Suitability of soil to plant growth and development (presence of humus) 	<p><i>The Learner...</i></p> <ul style="list-style-type: none"> ▪ demonstrates understanding of the different types of soil and how the soil type affects plant growth and development 	<p><i>The Learner...</i></p> <ul style="list-style-type: none"> ▪ investigates which soil type is suitable for particular types of plants 	<p><i>The Learner...</i></p> <ul style="list-style-type: none"> ▪ compares and contrasts the characteristics of different types of soil
<ul style="list-style-type: none"> ▪ Water in the Environment <ul style="list-style-type: none"> - Sources of water (spring, lakes, seas, rivers, streams, waterfalls and dams) - Importance of water - Wise use of water - Water cycle 	<ul style="list-style-type: none"> ▪ demonstrates understanding of the different sources of water suitable for human consumption 	<ul style="list-style-type: none"> ▪ demonstrates wise use of water in different situations 	<ul style="list-style-type: none"> ▪ identifies the different sources of water in the community ▪ investigates which sources of water in your community are suitable for human consumption ▪ describes the importance of the water cycle to life on Earth
<ul style="list-style-type: none"> ▪ Weather <ul style="list-style-type: none"> - What makes up the weather - Instruments to measure the weather components - Weather chart - Safety precautions 	<ul style="list-style-type: none"> ▪ demonstrates the understanding of weather and changes over time 	<ul style="list-style-type: none"> ▪ plans activities that he/she can do in different kinds of weather 	<ul style="list-style-type: none"> ▪ uses weather instruments to measure the different weather components ▪ record in a chart the weather conditions over a period of time ▪ identify safety precautions during different weather conditions
<ul style="list-style-type: none"> ▪ The Sun <ul style="list-style-type: none"> - Importance of the Sun - Harmful effects of overexposure to the Sun - Safety precautions 	<ul style="list-style-type: none"> ▪ demonstrates understanding of beneficial and harmful effects of the Sun 	<ul style="list-style-type: none"> ▪ practices precautionary measures to avoid harmful effects of the Sun 	<ul style="list-style-type: none"> ▪ observes changes in the surroundings as the position of the Sun changes ▪ describes the role of the Sun in the water cycle

Inform
Understand Reflect Improve
Modify Authentic Purposeful
Support Progress
Relevant Meaningful Assessment Instruction
Formative

2

Teachers need to utilize appropriate research-based models of learning when unpacking and designing relevant assessments and interpreting results.



← → ↻ www.ncpublicschools.org/docs/acre/standards/common-core_tools/unpacking/ela/6.pdf 🔍 ☆



North Carolina Department of Public Instruction
INSTRUCTIONAL SUPPORT TOOLS
FOR ACHIEVING NEW STANDARDS

English/Language Arts • Unpacked Content

For the new Common Core State Standards that will be effective in all North Carolina schools in the 2012-13 school year

This document is designed to help North Carolina educators teach the ELA Common Core State Standards.

NCDPI staff are continually updating and improving these tools to better serve teachers.

What is the purpose of this document?

To increase student achievement by ensuring educators understand specifically what the new standards mean a student must know, understand and be able to do.

What is in the document?

Descriptions of what each standard means a student will know, understand, and be able to do. The “unpacking” of the standards done in this document is an effort to answer a simple question “What does this standard mean that a student must know and be able to do?” and to ensure the description is helpful, specific and comprehensive for educators.

How do I send Feedback?

We intend the explanations and examples in this document to be helpful and specific. That said, we believe that as this document is used, teachers and educators will find ways in which the unpacking can be improved and made ever more useful. Please send feedback to us at feedback@dpi.state.nc.us and we will use your input to refine our unpacking of the standards. Thank You!

Just want the standards alone?

**ENGLISH LANGUAGE ARTS COMMON CORE STATE STANDARDS
GRADE 6**

CCR ANCHOR STANDARD	CCSS STANDARD	UNPACKING
College and Career Readiness Anchor Standards for Reading	Reading Literature	
Key Ideas and Details		
1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.	1. Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	Sixth grade students will read and analyze texts from a variety of literary genres. They develop the ability to closely examine the text’s explicit content. They learn how to look for and identify deeper meanings within the text by drawing inferences. To do this work, teachers can demonstrate and model for students how to refer to a text. Modeling may occur in the form of whole-class think-alouds followed by think/pair/share activities and guided practice. The teacher may also guide the students through the process of moving from analysis to synthesis. During this process, students carefully probe a segment of text in order to study and evaluate its multiple and varied meanings. The teacher and students work together to reconstruct and understand the text segment’s new meaning. Students take the textual content to which they add their own prior knowledge (personal experience and/or previous reading) to create new
2. Determine central ideas or themes of text and analyze their development; summarize the key supporting details and ideas.	2. Determine a theme or central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.	
3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.	3. Describe how a particular story’s or drama’s plot unfolds in a series of episodes as well as how the characters respond or change as the plot moves toward a resolution.	



3

Teachers need to be systematic in preparing various forms of assessment.

Formative and summative assessments need to be integrated, aligned with proficiency targets and planned in advance to inform instruction and ensure curriculum implementation.

	KNOW	UNDERSTAND	DO
DIAGNOSTIC			
FORMATIVE			
SUMMATIVE			
SELF-ASSESSMENT			

UNIT ASSESSMENT MAP WITH K-U-D UNPACKED FROM STANDARDS



4

Student learning needs to be progressive. Teachers in line with 21st century skills should prepare more challenging assessments which focus on higher levels of understanding and performance. Formative and summative assessments help teachers ensure this progression.

Three Types of Assessment Items

- **Level 2 items:** Simpler details and processes that have been explicitly taught
- **Level 3 items:** Complex ideas and processes that have been explicitly taught
- **Level 4 items:** Inferences and applications that go beyond what was taught

Inform
Understand Reflect
Modify Authentic Improve
Support Progress Purposeful
Relevant Meaningful Assessment Instruction
Formative

5

The ultimate goal of assessments is to obtain data or information that will enable a student to direct his or her own learning.

Relevant
Meaningful
Assessment
Formative
Instruction
Progress
Authentic
Reflect
Support
Modify
Understand
Improve
Purposeful

6

Teachers function as coaches communicating clear goals for learning, specific criteria for success and feedback and suggestions to students so that they can help themselves become proficient.

Relevant
Meaningful
Assessment
Formative
Support
Modify
Understand
Reflect
Authentic
Purposeful
Improve
Progress
Instruction

7

Given the need to integrate various assessments, research needs to be conducted on how teachers are being prepared for this at the pre-service stage and how they are supervised at the in-service stage.



“... university programs continue to graduate teachers who are overconfident and under competent when it comes to summarizing achievement and using assessment information to promote improved student learning. These studies could inform the design of teacher preparation programs that make quality assessment a focal point of effective pedagogy.

-Moss, 2012

REFERENCES

Bennett, R. (2009). Formative assessment: can the claims for effectiveness be substantiated? Educational Testing Service.

Department of Education. Implementing rules and regulations for Enhanced Basic Education Act of 2013.

Department of Education Order No. 73, series 2012. Guidelines on the assessment and rating of learning outcomes under the basic education curriculum.

Department of Education Order No. 8, series 2015. Policy guidelines on classroom assessment for the K to 12 basic education program.

Dunn, K. & Mulvenon, S. (2009). A critical review of research on formative assessment: the limited scientific evidence of the impact of formative assessment in education. Practical research and evaluation, Vol. 14 No. 7.

North Carolina Department of Public Instruction, English Language Arts Unpacked Content. Retrieved Sept. 10, 2015 from <http://www.ncpublicschools.org/docs/acre/standards/common-core-tools/unpacking/ela/6.pdf>

Kohn, A. (2000). The case against standardized testing. Portsmouth, NH: Heinemann.

McManus, S. (2008). Attributes of effective formative assessment. Washington DC: Council of Chief State Officers.

Nicol, D. & Macfarlane, D. (2005). Formative assessment and self-regulated learning: a model and seven principles of good feedback practice. Studies in Higher Education.

Office of Institutional Assessment and Evaluation Howard University. Self-regulation through continuous assessment, evaluation and improvement. Retrieved Sept. 13, 2015 from <http://www.howard.edu/assessment/about/conceptualframework.htm>

Olson, S. & Loucks-Horsley, S. Inquiry and the national education standards: a guide for teaching and learning. Washington DC: National Academy Press.

Partnership for 21st century learning skills, Retrieved Sept. 10, 2015 from http://www.p21.org/storage/documents/1_p21_framework_2-pager.pdf

Pellegrino, W., Chudowsky, N., Glaser, R. (2001). Knowing what students know. Washington DC: National Academy Press.

Popham, J. 1999. Why standardized tests don't measure educational quality. *Educational Leadership*. Vol. 56 No. 6.

Sadler, R. 1989. Formative assessment in the design of instructional system. *Instructional Science*. Vol. 18, pp. 119-144.

Thorpe, S. & Clifford J. What could go wrong? Retrieved Sept. 10, 2015 from <http://flylib.com/books/en/3.319.1.40/1/>

Viadero, D. Stanford report questions accuracy of tests. Retrieved Sept. 10, 2015 from <http://www.edweek.org/ew/articles/1999/10/06/06test.h19.html>