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Inquiry-based Formative Assessment for Improving Student Learning

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Abstract for DBER Group Discussion on 2013-02-28

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Title:
Formative Assessment as Action Research for Improving Student Learning

Abstract:
Assessment as inquiry is a cyclical problem-solving stance that can be applied to instructional decision-making in any classroom. This presentation will provide the DBER attendees with a framework for using formative assessments to inform their ongoing instructional choices. I will define formative assessment and briefly discuss some mechanisms for data collection. I will provide six design features to keep in mind when creating formative assessments and analyzing the data gleaned from them. Finally, I will discuss work in which I am engaged that involves the integration of inquiry-based formative assessment in K-12 instruction to meet the Common Core State Standards for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects.

Inquiry-based Formative Assessment for Improving Student Learning

Kathleen M. Wilson University of Nebraska – Lincoln
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Defining Formative Assessment

"An assessment is formative to the extent that **information** from the assessment is **fed back within the system** and actually **used to improve** the **performance** of the system in some way (i.e., that the assessment forms the direction of the improvement)".

(Wiliam, & Leahy, 2007, p. 31)

Formative Assessment Functions

- Provides evidence of **learning progress** and **teaching effectiveness**
- Determines **prior knowledge and interests**
- Generates **feedback** for teachers and students
- Provides **guidance for decisions** about curriculum and instruction
- **Validates** external sources of learning information

Genuine Formative Assessment

- Cannot be prescribed
- Depends on instructors' ongoing quest for information about the progress of their students
- Is purposefully incorporated into informed classroom instruction

Central Concept: Assessment as Inquiry

- **Instructors can gage:**
  - Strengths and limitations of instructional choices
  - Conditions that foster or hamper learning
  - Individual students' *response to instruction*

- **Students can gage:**
  - Effectiveness of their learning strategies
  - What they actually know

Assessment as Inquiry

- Iterative, synergistic cycle
- Incorporates the research process:
  - analyzing the problem and formulating one or more hypotheses
  - developing experimental conditions
  - collecting and analyzing evidence
  - reviewing the findings, deciding on next steps, and reporting the results

Formative Assessment: Design Features

- Integrated activities
- Purposefully aligned instruction and assessment
- Authentic social contexts
- Attention to motivation
- Promoting transfer
- Establishing technical integrity

Integrated Activities for Formative Assessment of Literacy

- ***Depth of knowledge*** framework
  - Multiple ways to 'show what you know'
  - Project formats interweave:
    - ***critical reading*** of texts and compositions
    - ***writing*** to understand text, record discussions, and communicate messages
    - ***oral language*** supportive of reading and writing
    - ***formal presentation*** as the capstone event

Alignment of Instruction and Formative Assessment

- **Purposefully embedded** in a longer term assessment process
- **Blurs the lines** between “testing” and instruction
- **Informed adaptations** in timing, resources, and attention to groups and individuals
- Aids in **observing shifts** in performance

Authentic Social Contexts

- **Collaborative**, problem-solving activities
- Chance to **see the best** students can do
- **Dynamic and scaffolded** environments
- Students' **self-evaluative** skills development
- Students view themselves as **autonomous learners**

Motivation's Role In Formative Assessment

"If all pupils are to meet standards, they all must believe that they can. They all must come to believe in themselves as effective learners. This requires the productive use of formative assessment." (Stiggins, 2007, p.11)

Promoting Transfer

- **Meta-understanding / Reflection** as the foundation
- **Explicit talk** about transfer
  - Questions about the learning processes
  - Questions about the products of learning
- **Feedback** from teachers, peers, and self in diverse situations

Technical Integrity in Formative Assessments

- Teachers need:
  - **High quality data** needed on an on-going basis
  - **Deep understanding** of the standards, concepts, and day-to-day content

Technical Integrity in Formative Assessments

- Questions to ask:
  - What's worth knowing and assessing?
  - How much detail is needed to answer inquiry questions?
  - What are students' perception of the assessment?
  - At what level are students involved with rubrics?

Formative Assessment: Issues

- Standardization, comparability, aggregability
- Teacher capacity
- Documentation and analysis
- Reliability and validity
- Time and costs – teachers and students; administration
- Responses to issues – depends on model

Current Work

A Model for Integrating Formative Assessment in the Common Core State Standards for English Language Arts

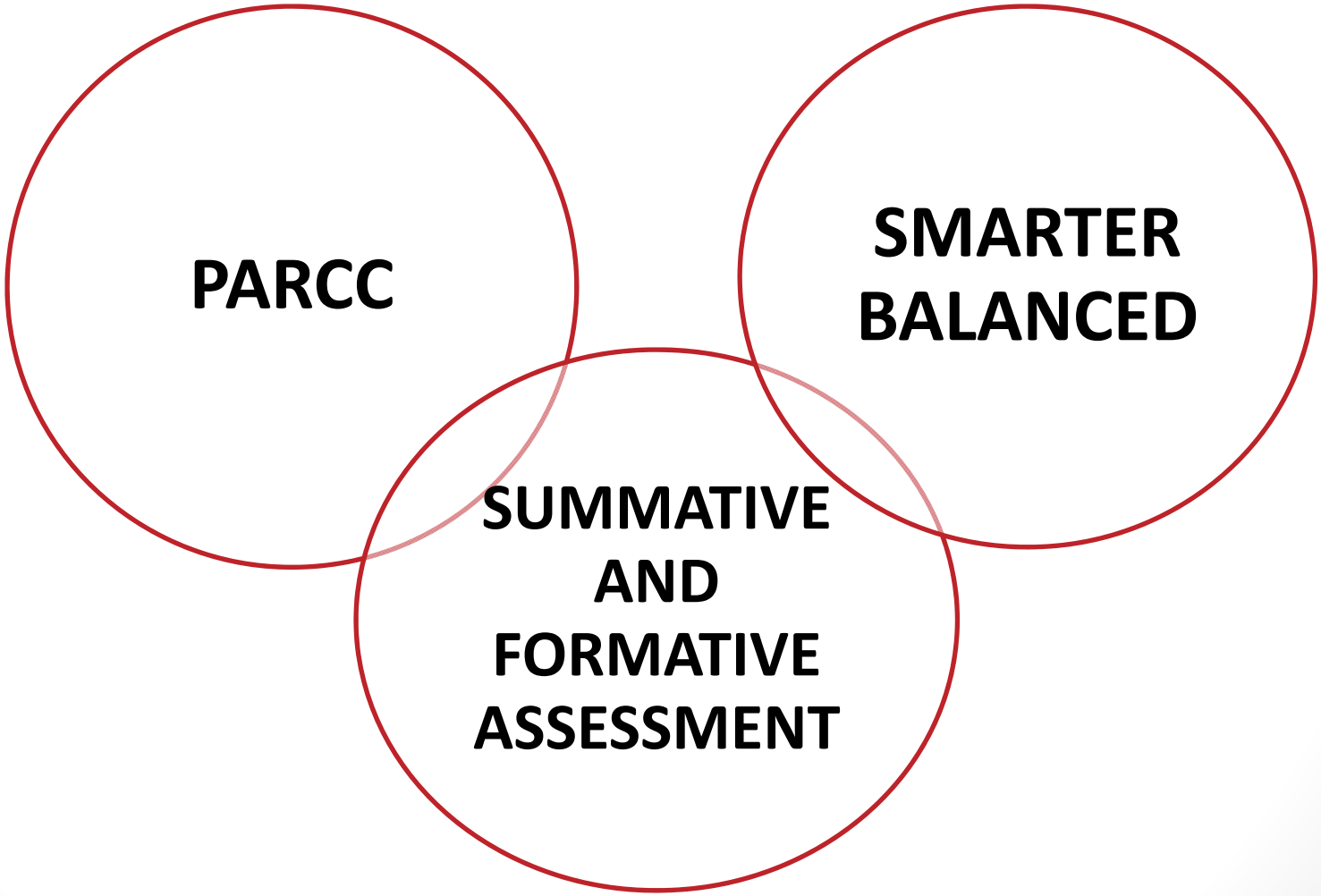
&

Literacy in History/Social Studies, Science, and Technical Subjects

The Promise of the CCSS
(Introduction pp. 3-9)

- All students fully prepared for **college, careers, and citizenship**
- An **integrated program** of language and literacy instruction
- Literacy in the **disciplines, professions, technical subjects, and crafts**
- Graduates are **independent, life-long learners and citizens**

Common Core State Standards Funded Consortia



Overview of our Proposal

- The **Vision**: **Promises** from the Common Core Standards

- **A Problem**: Current approaches to implementing the Standards will maintain the **status quo** for public schooling

- A **Solution**: The plan of action: **LP+FA –> Learning Progression + Formative Assessment**

Conceptualizing a Learning Progression (CPRE Formulation)

- **A Learning Progression**:
  - Is a **backward-mapped** set of **learning outcomes**
  - Incorporates **Cycle Time** and **Grain Size Levels**
  - Includes a small number of **strands** and **mileposts**
  - Relies on **Narrative flow**:
    - Layered developmental strands across grades,
    - And within school years (e.g., quarterly mileposts)
- **In order to:**
  - Provide **workable road maps for teachers**,
  - Afford an adequate basis for **formative assessment design**

Formative Assessment: Cycle Time/Grain Size

Cycle Time	Grain Size	Tools
Grade/Year	Comprehensive/Mile-wide/inch-thick; Efficient	Released items; Text-based writing samples; "First-week" assessment lessons
Quarter (FWS)	Milepost Monitoring	Same as above, but adjusted and targeted at each end point.
Unit (1-4 weeks)	Entry, work samples, project quality	Embedded in Unit plans based on PD templates; Project activities
Lesson (30 sec-30 minutes)	Broad spectrum; CORE (**C**onnect-**O**rganize-**R**eflect-**E**xtend), "on the fly"	Questioning; Discussion; Quick writes; "Thumbs." [Generic templates with PD annotated videos from Digital Library]

Breaking It Down -Years and Quarters: Learning Progressions - *Literacy for Science*

Kinder			Gr 1			Gr 2			Gr 3			Gr 4			Gr 5		
		*			*			*			*			*			*
F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S

- **Vocabulary and Concepts: Knowledge and Ideas**
- **Informational Text: Structures and Analyses**
- **Sentence complexity: "because," "if-then," etc.**
- **NRC Science Framework**
- **Assessment Topic (K-5): Science (P. 33) - *The Human Body***
- **Units:**
  - ***My five senses* (Aliki) Kindergarten to**
  - ***The remarkable respiratory system* (Burstein) Grade 5**

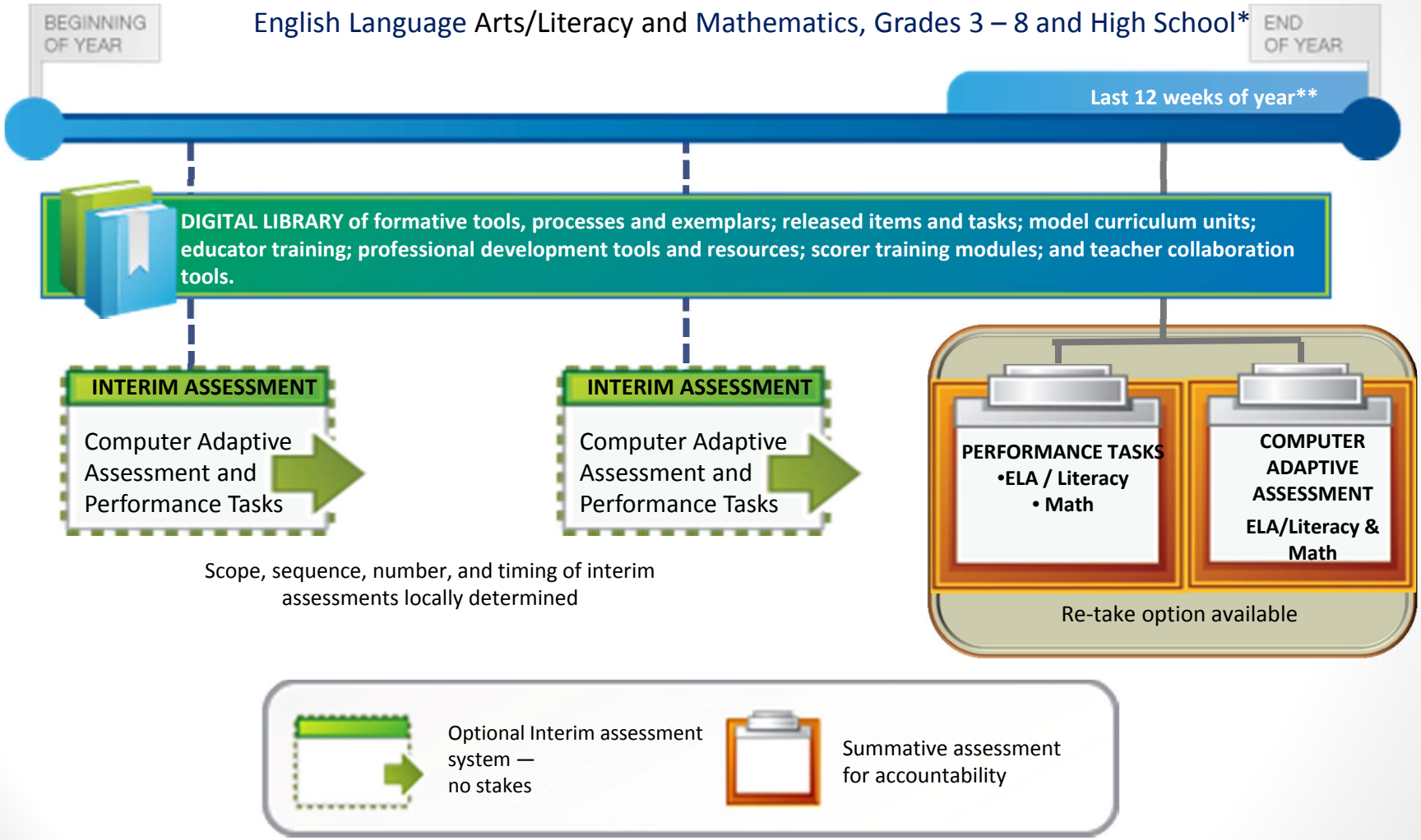
Breaking It Down – Units and Lessons: Linking Learning Progressions and Formative Assessments

Kinder:	1-2 wk	Units		Gr 5:	2-4 wk	Units
Connect-Organize	Read-Research-Compose	Present Project		Connect-Organize	Read-Research-Write	Present Project

Unit Level	Lesson Level
Writing Process	Discourse Activities
Draft & Develop	Discussion
Polish & Present	Questioning

- **Key Concepts: Grain size and cycle time**
- **Digital Library: Routines and video models**

Smarter Balanced Assessment System Digital Library



* Summative and interim assessments for grades 3 – 8 and 11, with additional supporting assessments for grades 9 and 10.

** Time windows may be adjusted based on results from the research agenda and final implementation decisions.

What is needed next?

- **Learning Progressions** for literacy fundamentals and the content in the academic disciplines
- **Instructional programs and materials** to support Progressions
- **Formative assessments** to monitor learning and guide instructional choices
- Comprehensive, continuing, and visionary **Professional Development Programs**

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