Inquiry-based Formative Assessment for Improving Student Learning

Kathleen M. Wilson
University of Nebraska, Lincoln, kwilson3@unl.edu

Robert C. Calfee
Stanford University, robert calfee@ucr.edu

Follow this and additional works at: https://digitalcommons.unl.edu/dberspeakers
Abstract for DBER Group Discussion on 2013-02-28

Presenter, Department(s):
Kathleen Wilson
Associate Professor
Department of Teaching, Learning, and Teacher Education
Kit and Dick Schmoker Reading Center Director

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
Robert C. Calfee  Stanford University
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

- PARCC
- SMARTER BALANCED
- SUMMATIVE AND FORMATIVE ASSESSMENT
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

<table>
<thead>
<tr>
<th>Cycle Time</th>
<th>Grain Size</th>
<th>Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grade/Year</strong></td>
<td>Comprehensive/Mile-wide/inch-thick; Efficient</td>
<td>Released items; Text-based writing samples; “First-week” assessment lessons</td>
</tr>
<tr>
<td><strong>Quarter (FWS)</strong></td>
<td>Milepost Monitoring</td>
<td>Same as above, but adjusted and targeted at each end point.</td>
</tr>
<tr>
<td><strong>Unit (1-4 weeks)</strong></td>
<td>Entry, work samples, project quality</td>
<td>Embedded in Unit plans based on PD templates; Project activities</td>
</tr>
<tr>
<td><strong>Lesson (30 sec-30 minutes)</strong></td>
<td>Broad spectrum; CORE (Connect-Organize-Reflect-Extend), “on the fly”</td>
<td>Questioning; Discussion; Quick writes; “Thumbs.” [Generic templates with PD annotated videos from Digital Library]</td>
</tr>
</tbody>
</table>
Breaking It Down - Years and Quarters: Learning Progressions - *Literacy for Science*

<table>
<thead>
<tr>
<th>Kinder</th>
<th>Gr 1</th>
<th>Gr 2</th>
<th>Gr 3</th>
<th>Gr 4</th>
<th>Gr 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F</th>
<th>W</th>
<th>S</th>
<th>F</th>
<th>W</th>
<th>S</th>
<th>F</th>
<th>W</th>
<th>S</th>
<th>F</th>
<th>W</th>
<th>S</th>
<th>F</th>
<th>W</th>
<th>S</th>
<th>F</th>
<th>W</th>
<th>S</th>
</tr>
</thead>
</table>

- 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

<table>
<thead>
<tr>
<th>Kinder:</th>
<th>1-2 wk</th>
<th>Units</th>
<th>Gr 5:</th>
<th>2-4 wk</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connect-O rganize</td>
<td>Read-Research-Compose</td>
<td>Present Project</td>
<td>Connect-Organize</td>
<td>Read-Research-Write</td>
<td>Present Project</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unit Level</th>
<th>Lesson Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Writing Process</td>
<td>Discourse Activities</td>
</tr>
<tr>
<td>Draft &amp; Develop</td>
<td>Discussion</td>
</tr>
<tr>
<td>Polish &amp; Present</td>
<td>Questioning</td>
</tr>
</tbody>
</table>

- Key Concepts: Grain size and cycle time
- Digital Library: Routines and video models
Smarter Balanced Assessment System

Digital Library

English Language Arts/Literacy and Mathematics, Grades 3 – 8 and High School*

INTERIM ASSESSMENT

Computer Adaptive Assessment and Performance Tasks

INTERIM ASSESSMENT

Computer Adaptive Assessment and Performance Tasks

PERFORMANCE TASKS

• ELA / Literacy
• Math

COMPUTER ADAPTIVE ASSESSMENT

ELA/Literacy & Math

Re-take option available

DIGITAL LIBRARY of formative tools, processes and exemplars; released items and tasks; model curriculum units; educator training; professional development tools and resources; scorer training modules; and teacher collaboration tools.

Scope, sequence, number, and timing of interim assessments locally determined

Optional Interim assessment system — no stakes

Summative assessment for accountability

* 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**