Identifying Learning Progressions in Common Core State Standards for use in Alternate Assessments

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About the NAAC learning progressions project…

- Sponsored by the National Alternate Assessment Center at UKY
- Content Experts Meeting - May 2010 to prioritize content (ELA, math, science)
- Teacher Experts Meeting – July & August 2010 – to develop curricular modules (lesson planning) for general ed and alternate assessment students
- NAAC Disseminates learning progressions frameworks & modules (ELA, math, science) by Sept. 30, 2010

Defining Learning Progressions

- Not everything that is called a learning a progression IS a learning progression – may not be the same as a curricular progression or scope & sequence
- Grain size matters – needs to match purpose & be manageable
  - Across grade levels
  - Within grade-level
  - A skill subset within a larger progression

A Working Definition…

"Learning progressions are descriptions of the successively more sophisticated ways of thinking about a topic that can follow one another as students learn about and investigate a topic over a broad span of time."

NRC *(2007)Taking Science to School*

Learning Progressions can provide a schema for …

- Understanding *the intent of the grade-level standards*
- Planning & Modifying Instruction (how to teach the standards)
- Developing Meaningful Assessments – especially formative assessments
- Monitoring Progress
  - Mastery of Specific Concepts & Skills
  - Novice ⟷ Expert

4 Interrelated Guiding Principles of Learning Progressions (Hess, 2008, 2010)

1. Based on available Research (hypotheses to be validated about how learning develops over time)
2. The big ideas/enduring understandings & essential concepts/processes are the binding threads
3. Articulate movement forward to increased understanding (probably not linear – more of a map than a route)
4. Go hand-in-hand with well-designed/aligned assessments

What we mean by “Research”…

- **Cognitive research** provides descriptions of how learning generally occurs, such as Vygotsky’s ZPD/Zone of Proximal Development (1978).
- **Content-specific research** has uncovered indicators of how conceptual understanding typically develops for the content domain, such as Driver’s synthesis of science learning and common misconceptions (2002).
- **Action research** at the classroom, school, or district levels offers possibilities for using formative assessment data to refine or “fill in gaps” in the existing or “curricular” LPs. Collaboratively analyzing data from ongoing classroom assessments provides a unique opportunity for teachers to develop a deeper understanding of how learning actually progresses. Teachers can “zoom in” for a closer look using formative assessment data with a much finer grain size and then “zoom out” again when using the larger-grained interim and summative assessments that monitor progress over longer learning periods (Gong, 2008).
- **2010 – ? – Action Research in classrooms to validate progressions!**

Remember that these draft learning progressions frameworks are…

- For all students/across grades
- Used to guide curriculum, lesson development, and progress monitoring
- Used to guide formative assessment use and instructional decisions
- Prioritized CCSS standards for essential learning
- Not yet validated

The job of the national content experts was to prioritize the essential learning for all students along a learning continuum

The job of the master teachers was to make the CCSS content accessible – texts, materials, lesson plans, & perhaps video examples

Our general process for developing the NAAC learning progressions frameworks

- **Step 1:** Identifying Big Ideas & Enduring Understandings for each content area
- **Step 2:** Identifying learning targets (standards) related to the Big Ideas & Enduring Knowledge for each content area across grade spans
- **Step 3:** Breaking down grade span learning into instructional stages along a continuum and aligning them with CCSS standards

What are enduring understandings*?

Big Ideas/Enduring Understandings have *enduring value* because they:

- ***Identify core concepts, principles, theories, and processes***
- ***Serve to organize important facts, skills, or actions around central ideas***
- ***Will transfer to other contexts or other disciplines***
- ***Require "uncoverage" of the abstract/ complex ideas that require genuine and deeper insights and inquiry in their discovery***

*Source: Wiggins & McTighe, 2001

A little more about the development of the NAAC learning progressions frameworks…

ELA - Identified 4 Key Areas & Enduring Understandings for Reading

- *Reading is using a variety of strategies to make meaning at the word level.*
- *Reading is making meaning at the text level and understanding unique features and structures of literary texts.*
- *Reading is making meaning at the text level and understanding unique features and structures of informational texts.*
- *Reading habits and attitudes affect enjoyment, motivation, and improvement in reading.*

ELA – Currently there are 2 Key Areas & Enduring Understandings for Writing

- Different genres of informational writing are appropriate for different purposes and require use of specific features, structures, and strategies to produce a coherent unit of thought that informs or persuades the intended audience.
- Different genres of literary writing are appropriate for different purposes and require use of specific features, structures, and strategies to produce a coherent unit of thought that entertains or enlightens the intended audience.

Science - Identified 3 Enduring Understandings for each Domain + Inquiry

- **Life Science**
  - **LS1:** All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, and species).
  - **LS2:** Matter cycles and energy flows through an ecosystem.
  - **LS3:** Groups of organisms show evidence of change over time (structures, behaviors, and biochemistry).
- **Physical Science**
  - **PS 1** All living and nonliving things are composed of matter having characteristic properties that distinguish one substance from another *(independent of size or amount of substance)*
  - **PS 2** Energy is necessary for change to occur in matter. Energy can be stored, transferred and transformed, but cannot be destroyed.
  - **PS 3** The motion of an object is affected by forces.
- **Earth & Space Science**
  - **ESS1:** The earth is part of a solar system, made up of distinct parts that have temporal and spatial interrelationships.
  - **ESS2:** The origin and evolution of galaxies and the universe demonstrate fundamental principles of physical science across vast distances and time
  - **ESS3:** The earth and earth materials as we know them today have developed over long periods of time, through continual change processes
- **Inquiry**
  - **INQ1:** Scientific inquiry is built on the interaction of evidence and logical reasoning – the importance of careful observation, the role of observations in supporting a line of reasoning, and the value of reasoning in suggesting new observations.

Mathematics - Identified 6 Key Areas with Enduring Understandings for…

- The Nature of Numbers and Operation
- Patterns, Relations, and Functions
- Symbols
- Data Analysis, Probability, and Statistics
- Geometry
- Measurement

Unpacking one mathematics enduring understanding…to show how learning develops and can built upon over time

Enduring Understanding K-12 for Mathematics – **Measurement**

Measurement processes and tools help us identify, quantify, and compare attributes of objects, situations, and events.

3 Learning Targets for this Big idea

- **Elementary School (by grade 4), students will…**
  - ***ME-1*** *Identify attributes, units, or systems of measurements.*
  - ***ME-2*** *Apply appropriate techniques (iteration and tiling), tools (standard and non-standard), and formulas (e.g., area, perimeter) to determine measurements.*
  - ***ME-3*** *Apply concepts of measurement to explore relationships between units, attributes, or measures.*

Learning Targets are then broken down further for guiding the development of instructional modules for:

Grades K-2 and 3-4
Grades 5-6 and 7-8
Grades 9-10 and 11-12

These smaller learning targets are “ordered” (1a, 1b, 1c, 1d, etc.) for planning instruction and developing units of study. Multiple lessons illustrate learning of each learning target.

Measurement (ME)-1

Identify attributes, units, or systems of measurements.

Grades K-2

Students demonstrate an understanding of measurable attributes by…

- **E.ME.1a** recognizing, identifying, and describing the measurable attributes of length, weight, area, and time.
- **E.ME.1b** comparing and ordering objects/events according to their specified attributes.

Grades 3-4

Students demonstrate an understanding of measurable attributes by…

- **E.ME.1c** describing and demonstrating unit attributes, iterating, tiling, identical units, standardization, proportionality, additivity, and origin.
- **E.ME.1d** selecting the appropriate unit for measuring each attribute (length, area, weight, volume, size of angle), recognizing that a unit must have the same attributes as the object (unit of length must measure an object that has length).
- **E.ME.1e** developing the need for measuring with standard units as compared to non-standard units.

Development of Curricular Modules

- **Learning Targets** for a grade span (K-2, 3-4, 5-6, etc.) are broken down into steps of a smaller grain size for developing a series of lessons that guide teachers to:
  - introduce the skills/concepts of the target(s)
  - practice the skills/concepts of the target(s)
  - assess the skills/concepts of the target(s)
- **Curricular Modules** at different grade spans illustrate how the same enduring understanding (and related skills/concepts) would be taught across grades

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