Considering Learning Progressions for Students with Disabilities

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Background on Learning Progressions

The basic idea:

“Kids learn. They start out by being able to do little, and over time they know and can do more, lots more. Their thinking becomes more and more sophisticated as they respond to instruction and experience in and outside of the school setting.”

(Mosher, 2011, p.2)
Recent Interest in the U.S.

- Interest in the idea of learning progressions gained ground
- Guide for standards, curriculum, instruction and assessment
- To date, mainly focused on math and science
Various Definitions

“…hypothesized descriptions of the successively more sophisticated ways student thinking about an important domain of knowledge or practice develops as children learn about and investigate that domain over an appropriate span of time” (Corcoran, Mosher & Rogat, 2009, p. 7)

“a description of skills understanding and knowledge in the sequence in which they typically develop: a picture of what it means to ‘improve’ in an area of learning ” (Masters & Forster, 1996, p. 1)
Various Definitions

“a researcher-conjectured, empirically-supported description of the ordered network of constructs a student encounters through instruction in order to move from informal ideas, through successive refinements of representation, articulation, and reflection, towards increasingly complex concepts over time” (Confrey & Maloney, 2010, p. 2)

“anchored at one end “by what is known about the concepts and reasoning of children entering school” and by societal expectations at the other end, proposing “intermediate understandings between these anchor points” (NRC, 2007, pp. 219-220)
Common Ideas

• Describe development over time
• Learning as a process of progressive sophistication
• Not necessarily linear
• Progressions are based on research and conceptual analysis
• Iterative development process
Application of Ideas in MN Project

• Apply to the domain of reading (multiple strands)
• Create specifically with reference to students with disabilities
• Use research, conceptual analysis, input from range of experts in reading and students with disabilities, expert teachers
• Explore representations of the domain
Minnesota’s Story

• 2007 Regulations of NCLB –
  • Offered States a new assessment option
  • IEP goals based on grade-level academic content standards

• 2008 MDE decides on MCA-Modified

• 2009 Standards-based IEP workgroup

• 2010 Training materials
The Big Question

What do we do for those students who are currently performing multiple years below grade-level?
Margaret to the Rescue!

LEARNING PROGRESSIONS:
SUPPORTING INSTRUCTION AND FORMATIVE ASSESSMENT

MARGARET HERITAGE

NATIONAL CENTER FOR RESEARCH ON EVALUATION, STANDARDS, AND STUDENT TESTING (CRESST)
GRADUATE SCHOOL OF EDUCATION AND INFORMATION STUDIES
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Paper prepared for the Formative Assessment for Teachers and Students (FAST) State Collaborative on Assessment and Student Standards (SCASS) of the Council of Chief State School Officers (CCSSO)
The Goal:

To design a protocol that IEP Teams could use to develop individualized learning progressions during IEP meetings.
Starting with Two Key Ingredients

1. Legal Requirements
Access to modified assessment required standards-based IEP goal

2. Standards, Benchmarks, and Notion of Progression
The Notion of a Learning Progression

Characteristics of a Progression:

• Lays out a map/sequence of steps or increasingly more sophisticated understandings of core concepts/principles/skills in a domain
• Based on research and conceptual analysis of core ideas/principles/skills required for expertise
• Describe development over an extended period of time
• Are conceptually coherent

Heritage, 2009
Create a progression in an IEP meeting to derive an IEP goal
First Attempt: Helping Kara

Sequenced steps of increasingly more sophisticated understandings via think-a-loud
Next Iteration: Special Education Supports

We broke-down the presumption that students with disabilities have requisite skills and understandings.
Using Learning Progressions: Getting to a Realistic SB-IEP Goal

1. Create a progression in an IEP meeting to derive an IEP goal

Create a progression prior to the IEP meeting

A. Tackled a high leverage skill
   • Inferencing is the hardest to learn and teach
   • Progression has to work for ALL kids but makes explicit what is not automatically developed in kids with disabilities
   • Accounts for inferencing as a life skill as well as a literacy skill
   • Moves us from functional to academic goals

B. Shows development over extended period of time

C. Validated by experts and useful for team discussions
Adding Two More Key Ingredients

1. Legal Requirements
Access to modified assessment required standards-based IEP goal

3. Examples of Good Reader Behaviors

2. Standards, Benchmarks, and Notion of Progression

4. Theoretical Models of Research

Linguistic and Writing System Knowledge
- Orthographic System
  - Mapping to phonology
- Linguistic System
  - Phonology, Syntax, Morphology

Lexicon
- Meaning
- Morphology
- Syntax
  - argument structure
  - thematic roles

Comprehension Processes
- Parser
- Text Representation
- Situation model
- Inferences

NonLinguistic (conceptual) knowledge

Perfetti (1999); Perfetti, Landi & Oakhill, 2005
Percolating Through the Community of Practice and Many Iterations Later. . .

Understandings and were chunked into categories
Implicit skills were made explicit
Gaining Expert Feedback on the Progression

- Sent to National Experts to Review
  - Learning Disabilities
  - Reading
  - Speech Language Pathologists
  - Education Psychologists
- Responses Reviewed & Integrated
- More Research Considered
- More Practitioner Expertise Considered
## Last Vetted Progression...

### Experiences and Prior Knowledge

- A.12 Elaborate and integrate conceptual understanding with prior knowledge
- A.11 Use domain specific and technical knowledge
- A.10 Apply period and culture specific values, beliefs, perspectives, and knowledge
- A.9 Use contextualized knowledge and elaborated schemas
  - Inductive/deductive reasoning
- A.8 Incorporate knowledge and perspective taking of others
- A.7 Meta-cognition: Apply conscious and strategic effort to make sense
  - Filter out irrelevant information
  - Question based on knowledge and text
- A.6 Meta-cognition: Actively make sense and work out anomalies to clarify including:
  - Imagining
  - Social language--Inflection, non-verbal cues, social rules
- A.5 Reason by analogy
- A.4 Apply cause/effect reasoning
- A.3 Make connections between experiences and knowledge
- A.2 Recognize patterns and develop expectations
- A.1 Learn by observation

### Word Level Knowledge

- B.8 Apply technical terms and content specific vocabulary
- B.7 Decipher less common figurative language:
  - Metaphors
  - Idioms/Adages
  - Slang, sarcasm, colloquialism
  - Periodic specific vocabulary
- B.6 Identify connotative meanings of words

### Phrase and Sentence Level Knowledge

- C.12 Recognize states of mind, author’s claims, bias, cultural influence
- C.11 Recognize others perspective or stance on a topic given word choice, sequence, and syntax
- C.10 Apply understanding of clausal structure (adverbial, embedded, etc.) to unpack compacted ideas
- C.9 Metacognition: Actively manage the anticipated against the stated:
  - Anomalies at the clause and sentence level
  - Violations of what is known
  - Filling in gaps
- C.8 Tracks references to objects, characters, etc. across sentences and sections of text
- C.7 Uses integrated knowledge of schemas, the stated, complex sentences, pictures, to construct an understanding
- C.6 Applies knowledge of clausal structure and syntax to make sense and clarify

### Extended Text and Discourse Knowledge

- D.7 Apply knowledge of advanced informational text structure and features
  - Technical argumentation
  - Political cartoons etc.
- D.6 Apply knowledge of advanced narrative structures
  - Satire
  - Novellas
  - Poetry—free verse
  - Persuasion—detecting bias

### Inference with Text

- Flexibly toggle between vast knowledge/experience/empatic understanding and text to infer:
  - Intention and states of mind
  - Logical connections and insights
  - Interactions across multiple or diverse sources
- E.2 Flexibly toggle between relevant knowledge and progressively longer sections of text to maintain standards of coherence and make:
  - Evaluative inferences
  - Elaborative Inferences
  - Clarifying inferences
- E.1 Flexibly pull relevant knowledge and understanding of text structure to make:
  - Predictions
  - Associations
  - Cause/effect inferences (explain nature of events)
Categories of Understandings Necessary for Making an Inference

• The headers tell us the understandings that have to come together automatically and efficiently

• We are looking for patterns not a single experience or text

• We are differentiating between issues with automatic retrieval and integration across categories and insufficient or complete lack of understanding

• Fluid reasoning, working memory and attention a requisite cognitive skills that can be over-whelmed anywhere along the way
Vertical Progressions: Complexity and Depth Increase

- We build vertical understandings with extensive exposure and opportunities to practice
- Initial and concrete experiences build to abstractions with repetition and variety
- Typical breakdowns occur when personal knowledge and experience are not accessed or do not exist
Inferences Require Automatic Activation and Integration Across Categories

Experiences and Prior Knowledge

Word Level Knowledge

Phrase and Sentence Level Knowledge

Extended Text and Discourse Knowledge

Inference with Text

A.9 Use de-contextualized knowledge and elaborated schemas
   - Inductive/deductive reasoning
A.8 Incorporate knowledge and perspective taking of others
A.7 Meta-cognition: Apply conscious and strategic effort to make sense:
   - Filter irrelevant information
   - Question/Predict
B.5 Establish de-contextualized word knowledge:
   - Selective restrictions
   - Nuanced understanding
B.4 Apply existing word knowledge to:
   - Derived forms (phonology, orthography, semantic)
   - Refine specific meaning
   - Infer situational meaning
   - Decipher figurative language
C.9 Metacognition: Actively manage the anticipated against the stated:
   - Anomalies at the clause and sentence level
   - Violations of what is known
   - Filling in gaps
C.8 Track references to objects, characters, etc. across phrases and sentences
C.7 Use integrated knowledge of schemas, the stated, complex sentences, pictures, to construct an understanding
D.5 Meta-cognition: Actively manage knowledge, language, and strategies, to maintain and re-create coherence
E.2 Flexibly toggle between relevant knowledge and progressively longer sections of text to maintain standards of coherence and make:
   - Evaluative inferences
   - Elaborative Inferences
   - Clarifying inferences
PAIR AND SHARE

Skim through the progression with your shoulder partner and discuss what you notice
Inferences are not Just About Text

What understanding is required to determine if this is funny?

Students can have breakdowns in inferencing ability unrelated to text.
Fluent Activation and Integration Across the Progression is not Linear

Ramona knows that her feet are getting bigger, but she doesn't think that they are comparable to those of the ten-feet tall mythical creature. "Superfoot to you, Yard Ape," she retorts.
Progressions are Not Disability Specific: Anticipating Instruction for Pragmatic Language Deficits

Based on the nature of the disability:

- We can **anticipate but not presume** difficulty in implicitly acquiring vertical understandings
- We may expect a need for **ongoing explicit and intentional teaching vertically and horizontally**
### Progressions Show Pathways: Focusing on Breakdown to Mitigate the Disability

#### Experiences and Prior Knowledge
- A.12 Elaborate and integrate conceptual understanding with prior knowledge
- A.11 Use domain specific and technical knowledge
- A.10 Apply period and culture specific values, beliefs, perspectives, and knowledge
- A.9 Use contextualized knowledge and elaborated schemas
  - Inductive/deductive reasoning
- A.8 Incorporate knowledge and perspective taking of others
- A.7 Meta-cognition: Apply conscious and strategic effort to make sense:
  - Filter out irrelevant information
  - Question based on knowledge and text
- A.6 Meta-cognition: Actively make sense and work out anomalies to clarify including:
  - Imagining
  - Social language—inflection, non-verbal cues, social rules
- A.5 Reason by analogy
- A.4 Apply cause/effect reasoning
- A.3 Make connections between experiences and knowledge
- A.2 Recognize patterns and develop expectations

#### Word Level Knowledge
- B.8 Apply technical terms and content specific vocabulary
- B.7 Decrypt less common figurative language:
  - Metaphors
  - Idioms/Adages
  - Slang, sarcasm, colloquialisms
  - Period specific vocabulary
- B.6 Identify connotative meanings of words
- B.5 Establish contextualized word knowledge:
  - Selective restrictions
  - Nuanced understanding
- B.4 Apply existing word knowledge to:
  - Derived forms (phonology, orthography, semantic)
  - Refine specific meaning
  - Infer situational meaning
  - Decrypt figurative language
- B.3 Organize words and understandings into hierarchical categories (may be thematic or taxonomic)
- B.2 Develop morphographic knowledge (roots, prefixes, word endings) from orthography
- B.1 Link words in verbal repertoire with foundational knowledge:
  - Multiple meanings
  - Synonyms and antonyms
  - Simple categories
  - Name and function

#### Phrase and Sentence Level Knowledge
- C.12 Recognize states of mind, author’s claims, bias, cultural influence
- C.11 Recognize others’ perspective or stance on a topic given word choice, sequence, and syntax
- C.10 Apply understanding of clausal structure (adverbial, embedded, etc.) to unpack compacted ideas
- C.9 Internal cognition: Actively manage the anticipated against the stated:
  - Anomalies at the clause and sentence level
  - Violations of what is known
  - Filling in gaps
- C.8 Tracks references to objects, characters, etc. across sentences and sections of text
- C.7 Uses integrated knowledge of schemas, the stated, complex sentences, pictures, to construct an understanding
- C.6 Applies knowledge of clausal structure and syntax to make sense and clarify
- C.5 Understanding and using “wh” questions effectively
- C.4 Use words to illustrate relationships within phrases and sentences:
  - Disjunctive (however, but)
  - Sequence (before, after)
  - Causal: (if, then)
- C.3 Use inner voice to guide behavior (requisite for meta-cognition)

#### Extended Text and Discourse Knowledge
- D.7 Apply knowledge of advanced informational text structure and features
  - Technical argumentation
  - Political cartoons etc.
- D.6 Apply knowledge of advanced narrative structures
  - Satire
  - Novellas
  - Poetry—free verse
  - Persuasion—detecting bias
- D.5 Meta-cognition: Actively manage knowledge, language, and strategies, to maintain and re-create coherence
- D.4 Analyze informational text structure and features to build meaning and maintain coherence
  - Organization of arguments
  - Graphs, charts, pictures
  - Digital sources of text and media
- D.3 Apply knowledge of narrative text:
  - Novel, legends, fables, etc.
  - Staged dialogue
  - Graphic novels
- D.2 Use visual supports to manage coherence and make meaning:
  - Text features
  - Graphics
  - Pictures
- D.1 Compare experience and knowledge of narrative structure, (e.g. story grammar, and informational text structure, and
Progressions Show Pathways: Focusing on Breakdown to Mitigate the Disability

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Community Sourcing for Practical Applications
Community Sourcing for Practical Applications

Reason by analogy

How is it necessary for being able to make an inference?

We can see that analogies help us build connections between known and unfamiliar topics by making a comparison of like qualities. This is one way to make inferences at cue and support student experiences, development of categories and categorization as a means to organize thinking. A more advanced application of reasoning with an student begins to use analogies to communicate ideas and make inferences. At age 4, Ruby was hiking just above the tree line on a mountain. As she heard the crunch of the and said, "it sounds like plates breaking on the floor." At this young age Ruby adults are cuing children to making connections through analogies; however, this ability m conversations or text. An adult may have to cue her to actively make these types of comparisons both in conversation, text and written expression.

A more sophisticated and abstract example of using analogical reasoning would be a student trying to convey emotional significance by relating what he has read to some winning run because you dropped the ball. In this way you may find that reasoning by analogy is used by adults early on in the process of scaffolding the ability to make communicate their own thinking. Analogies can become quite complex and abstract, so at this level we are talking about the most basic analogies to build understanding developing characteristics in terms of some useful combination of characteristic that describe what is shared.

Assessment: How do I identify the presence, partial application or understanding?

What does it look like when a student uses reasoning by analogy to make an inference (please give a couple of examples for variety):

Instruction: How do I support at student:

a. Who isn’t automatically and effortlessly . . .

b. Compensate for insufficient use of. . .

c. Learn to reason by analogy. . .

B. How can I help a student compensate for lack of reasoning skills or inability to use analogies?

C. How do I teach students to reason by analogy if the entire understanding is missing?

What does an example standards-based IEP goal look like?

Research citations:
Creating a Teaching Sequence: Sara’s Story

Glogster

Minneapolis Department of Education Working Draft of Learning Progression for Inferring

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In Practice
In Practice
The Progression May Enlighten how we Teach Students with Significant Cognitive Disabilities

Horizontal components what we currently do well

Vertical components are not currently explicitly taught

Next Generation Question:

• Can we use the progression to cue us what to teach?
• Can we use it to track what we intentionally teach?
At Last We Have a Progression that is a Useful for Practitioners

- It can be used to support collaboration
  - Integrates multiple disciplines of knowledge into a coherent understanding inferencing
  - Creates shared instructional responsibility for goals

- It can be used for instructional planning
  - Facilitates pinpointing breakdown and nature of disability impacting inferencing development

- It can be used to track progress and next instructional steps
Quotes from other Practitioners

• “Progressions” vs. “Skills” is a paradigm shift

• Helps us to explain what is so special about what we do

• Brings special education, general education and speech language pathologists together

• Cuts across multiple strands, standards and content areas

• Helps us to see that inferencing is a high leverage skill
THE FUTURE OF OUR PROGRESSION

Interactive and Community Experience
Inferencing Progression into the Future
Into the Future: Documenting Teaching
Into the Future: Documenting Choice
Reason by analogy

How it is necessary for being able to make an inference

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Domain specific terminology team members can use to develop deeper understanding

Assessment: Identifying presence, partial, or absence of understanding

What does it look like when a student uses reasoning by analogy to make an inference (please give a couple of examples for variety):

How we know a student can reason by analogy (assessment can be from formative, formal, informal):

Instructional Supports (note there are 3 levels) How do I help the student use analogical reasoning:

A. When a student isn't automatically and effortlessly using analogies to connect ideas and make comparisons?

B. How can I help a student compensate for lack of reasoning skills or inability to use analogies?

C. How do I teach students to reason by analogy if the entire understanding is missing?

Example of standards-based IEP goal related to building this understanding in order to get closer to making an inference.

Research citations:
Into the Future: Custom Progressions by Student

Johnny's progress 2012
Into the Future: Text Based Progressions

<table>
<thead>
<tr>
<th>Path</th>
<th>Progression</th>
<th>Minnesota Department of Ed 2012</th>
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<tr>
<td>A1</td>
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Diagram:
- Use decontextualized knowledge and elaborated schemas

Inferencing Mapper
DISCUSSANT

Martha Thurlow