



## Module 1: The Learner: What Is Needed?

### Part 4 Transcript: How Are Data Gathered?

#### NOTES

We have both formal (standardized or published tests) and informal (IRI, observations, running records) means for gathering information about a struggling reader's performance. The quality of our information determines the next step in the process. Our expectations should be realistic, framed from a true awareness of developmental stages, a deep understanding of the reading process as a whole, and expected state and national standards. A foundational premise should include the idea: All individuals can learn, given time and opportunity.

#### What Do We Need to Know?

The developmental age of the learner will often determine the approach for gathering information, but the following is a brief list.

- Age of the student
- Prior educational experiences
- Previous approaches to instruction (i.e. phonics, whole word)
- Home language
- Family situation (i.e. first child with two siblings)
- Thinking style (gathered by asking preference: Verbal or pictorial)
- Handedness (identified by handwriting sample)
- General health issues including eyesight, hearing loss, dominant side, fine motor skills
- Memory capacity (determined by chunking exercise)
- Current grade level and performance levels on reading and/or listening
- Age-appropriate levels to determine if discrepancies exist.

Knowing this background information sets the stage for gathering additional information to determine potential areas of need.

#### Informal Reading Inventories (IRI)

Several published IRI exist, each with a collection of assessment options including two components: Word lists and passages. With experience, these can be administered in a short amount of time. They help to determine the *zone of*

*proximal development* (ZPD), a miscue analysis, a notation of fluency, type of comprehension issues, and how a reader approaches the process. Selections from an IRI can be used for retelling, to assess context clues, and how well a student listens for information or processes information.

**Word Lists.** Assessing recognition and identification of words outside of context, a student is asked to read a list of 20 words. Analyzing the miscues reveals the type of errors in manipulating sounds or symbols in written language. These include mispronunciations, substitutions, insertion of a new sound, omissions of a sound which should be present, reversals or exchanging an order of a sound, and repetitions. Word lists also reveal a learner's potential understanding of structure, including how morphemes are assembled. Errors contribute evidence for a learner's dominant approach to reading: Graphic, syntactic, or semantic in origin.

To view an example: [Grade Level Word Assessment with Gracie.](#)

**Passages.** Used for listening, oral, and silent reading, the passages of an IRI measure comprehension or the ability to derive meaning from written text – the true purpose of decoding sound and symbol. Even though a learner may be able to recognize or identify individual words, without a grasp of how these fit together to create meaning, true reading has not occurred. As with the word lists, types of comprehension errors reveal how the coded information is being processed, often distinguishing between concrete and abstract or verbal and pictorial thinking.

To view an example: [Passage Assessment with Gracie.](#)

### **Cloze Procedure**

The Cloze approach has been used in a variety of ways. By omitting words within an intentional pattern, three purposes can be achieved:

1. To determine readability levels of texts
2. To instruct students in the use of context clues
3. To test students to determine placement (Cloze test) (McCormick, 2007, p. 112)

By constructing a Cloze test using an available textbook, such as science or social studies, a teacher can determine if the text level is too easy or too difficult for a student, and with prior knowledge, can identify his or her reading level. Several examples of a Cloze passage exist on the Internet.

### Spelling Inventories

Word studies reveal the thinker's processing behind the production of the sound/symbol relationship. English is not a language of conformity but a merger of several languages over a significant amount of time. Though the rules of writing a word are not uniform, patterns do emerge for using the alphabet to construct a series of letters associated with a contextual meaning. The collective sounds of /cat/ could mean a household pet, a jungle animal, or when capitalized, a large earthmoving machine. One's orthographic knowledge reveals the connection between alphabet usage, patterns, and comprehension. Like the Cloze, several examples of spelling inventories are available online.

### Handwriting Samples

From the way the pencil is gripped to how the letters are formed, a handwriting sample conveys information about fine motor skills, directionality as in understanding up/down, left/right, top/bottom of a paper, and the recognition of how writing is accomplished in English, from left to right, top to bottom, which is not the case in all languages. A sample also demonstrates an understanding of appropriate spacing and the proper construction of the strokes in a letter. Gripping the pencil too tightly implies a lack of confidence with the task at hand. Too much pressure on the paper signals confusion or uncertainty. Frequent errors, erasing, or gazing into space or pausing usually relates to a lack of mastery with letters. This is also true for deletions, substitutions, reversals or exchanging letters.

A handwriting sample also reveals posture, how far a student is from the paper, the tilt of the page when writing as an expression of the body's physical engagement. Excessive moving, chewing on the pencil, or other distracting movements imply a potential warning sign of something interfering with the writing process.

Careful considerations of these observations are signs of concern:

- Failure to use conventional form. Notebook paper has a standard use with the holes on the left side. With young children, this is not a consideration, but with older learners, failure to use this suggests a lack of an inner framework, structure, or context for creating letters. It is a global issue with implications for reading.
- Lack of consistent spacing. This includes crowding letters, irregular distance between letters, jumping lines or other extremes in letter placement. The hand follows what the eye sees. Jumbled printing may indicate jerky eye movement, lack of converging focus, or the inability

to follow the flow of text lines. This also suggests vision field issues such as figure/ground. Black text on a white background is easier to see than colored fonts on a picture. Discriminating between text and design is another important feature of reading.

- Hesitating or gazing away from the task may mean a learner is looking within to find a letter or without to see if an example exists in the room. Mastery of the letters is essential for reading. All letters must be identified quickly and accurately, and all are significant. Failure to represent the letters in an orderly manner often suggests a learner cannot “see” the mental image for the symbol, which means they cannot recreate it. Technically, it is not learned at the level needed for use.
- A tight grip and/or heavy pressure imply a similar inability to recall letter formation or a problem with fine motor skills. Fine or delicate muscles also control eye movement.
- Poor formation of lines and circles or failure to follow a consistent approach is another indication of an inability to either control the pencil or visually recall how the letter is constructed.
- Letters printed in a column rather than a row suggest a different approach to mental organization. Ask the student to show you how to track across the page of text.

### **Assessment Procedures**

Provide a piece of common notebook paper and a sharpened pencil. Share the following directions:

1. Write your name and age at the top of the page.
2. Write the printed (or manual) alphabet, capital letter followed by the lowercase letter, beginning with Aa. (Don't specifically say cursive, but if asked, these are printed letters).

### **Assessment Results**

1. Watch for hesitations, gazing into space, looking for environmental clues.
2. Check for eye-to-paper distance, posture, tilt of paper, and grip of pencil.
3. Check for organization and the other items previously listed.
4. Make a note of inconsistencies to determine if these show up in other assessments.

### **Chunking**

The phenomenon of chunking can be seen across educational, neurological, and psychological fields. George

Miller (1956) suggested short-term memory had a capacity to hold meaningful pieces of information (5-9 chunks depending upon age) for a limited period of time. These pieces could be symbols, faces, concepts, signs, sounds, or any relevant element which is identified and recognized by the thinker. Unknown information requires concentrated focus to create a link for understanding, minimizing the chunk size.

This concept of the informational processing framework has interesting implications for reading. A simple three-letter word, /cap/, has to be initially processed, potentially in two ways. Visually, the symbols or letters must be recognized, sounds identified, blended together into a continuous stream before connecting the word /cap/ with a lid to a bottle or a hat for the head. Another approach suggests the whole spoken word is chunked together with a visual cue to first form the association with the meaning, and then the letters are isolated. Research supports both approaches.

A more complex word, /capable/, implies a thinker can recognize a string of seven letters or chunks of sound. It would be easier to identify two smaller words or chunks, /cap/ and /able/. What about /capability/? According to Miller, a 10-letter word exceeds short-term memory capacity, even for an adult. In this case, /cap/ and /ability/ would be effective, but for younger children, /ability/ would need to be divided into /abil-/ and /-ity/ as a recognized suffix.

Knowing how words are structured supports the idea of chunking, from recognizing syllables to identifying affixes. By dividing an unknown word into easily identified pieces, learners can master the parts in order to recognize the whole.

For a lecture, view: [Short Term Memory Assessment for Reading](#)

### **Assessment Procedure**

Ideally, purchase a collection of 20-30 colored 1-inch cubes (usually available at a teacher supply store), which provides additional information as to dimensional thinking, or make construction paper squares of equal size with 5-7 color options. For best results, laminated Ziplock plastic bags offer an easy and convenient way to carry these materials. Give the following directions:

**Step 1.** Model a pattern of two cubes with two colors. Say, “Do you see this pattern? Show me that you can make the same pattern I made.” They are making what they see when sitting across a table from you. The pattern is not turned or rotated. Praise should follow.

**Step 2.** Make another two-cube pattern. Say, “I want you to make this new pattern, but wait until I’ve finished. This time, I’m going to cover up the pattern, and you will need to do it from memory. Do you see this pattern?” Wait for a response, then hide the original pattern. This can be done by placing a book, folder, or lid between you and the learner. Praise should follow.

**Step 3.** Following the same procedure, increase the pattern to three cubes, by changing only one characteristic. Wait 2-3 seconds for each cube added to the pattern before covering. The longer the pattern, the more time the brain needs to process the train of cubes. Repeat the process by increasing the length of the pattern until the learner fails to successfully reproduce the pattern twice from memory.

### Creating Patterns

These are flexible. Rule-of-thumb: Change only one characteristic, such as the number of colors or length, each time. Here’s an example:

| Pattern                                                                                       | Configuration     |
|-----------------------------------------------------------------------------------------------|-------------------|
| Green – Blue                                                                                  | 2 colors, 2 cubes |
| Blue – Yellow – Blue                                                                          | 2 colors, 3 cubes |
| Yellow – Blue – Orange                                                                        | 3 colors, 3 cubes |
| Orange – Blue – Orange – Blue<br>[Technically, this one is two smaller patterns put together] | 2 colors, 4 cubes |
| Green – Orange – Green – Blue                                                                 | 3 colors, 4 cubes |
| Yellow – Green – Orange – Blue                                                                | 4 colors, 4 cubes |
| Yellow – Orange – Red – Blue – Yellow<br>[Bookend pattern]                                    | 4 colors, 5 cubes |

|                                                                           |                                                          |
|---------------------------------------------------------------------------|----------------------------------------------------------|
| Orange – Red – Orange – Red – Blue<br>[Technically, two smaller patterns] | 4 colors, 5 cubes<br>2 colors, 2 cubes/3 colors, 3 cubes |
| Green – Blue – Red – Orange – Yellow                                      | 5 colors, 5 cubes                                        |

To view an example of a fifth grader: [Short-term Memory Assessment with Gracie](#)

To view an example of a first grader: [Short-term Memory Assessment with Jackson](#)

Most young children know their colors before knowing the alphabet. This simple assessment is fun, easily administered, and provides a great deal of information about processing.

### Assessment Results

1. Long pauses [Speed of processing]
2. Use of both hands [Lack of dominance both physically, which may indicate laterality issues, and hemispherical – left or right hemisphere of the brain]
3. Orderly approach [One cube at a time or collecting cubes before ordering – kinetic thinker]
4. Matching pattern [Space the cubes together like a train, close together without touching, or messy, not aligned but in proper order – implies the organizational approach of the brain]
5. Murmuring pattern [Implies auditory connection]
6. Eyes scanning [Number of times the eyes have to repeat the pattern before being ready to make it – implies rehearsal]
7. Clues to identifying internal patterning. Do they show any behavior suggesting they are breaking the train into smaller parts?

Each person is different with results highly variable. A good rule-of-thumb relates to developmental stages. Miller (1956) determined most adults have a chunking size of 7, plus or minus 2, but adults are highly variable depending upon their mental acuity and training.

|                   |                      |
|-------------------|----------------------|
| <b>Age Groups</b> | <b>Size of Chunk</b> |
|-------------------|----------------------|

|               |           |
|---------------|-----------|
| Ages up to 5  | 2-4 cubes |
| Ages 4-12     | 3-5 cubes |
| Ages 10-18    | 4-7 cubes |
| Ages 15-adult | 5-9 cubes |

### Problem solving

This task has many options. Determining how a student identifies a problem and works towards a solution provides a clue to how the task of decoding unknown words is accomplished. Trial and error? Look at the problem without touching? Think before attempting? Attempt it in an orderly fashion?

For a lecture, view: [Problem Solving Assessment for Reading](#)

### Creating the materials

The task created for this assessment depends upon the availability of materials. Simple puzzles work best with a progression of difficulty required for completion. These can be made by shrinking or enlarging a series of images, each more complicated. Line drawings would be ideal with only one image on the puzzle. Laminate. Cut each into equal squares, beginning with 3 columns, 2 rows for the first picture; the second, 3 columns, 3 rows; etc. The difficulty and complexity of the last images depends upon who will be assessed. Adults can accomplish more challenging tasks than young children. The idea is not to trick or frustrate the learner but to create a task that requires assembling, connecting, or other solutions. Organize each image into isolated packets. Prepare one as an example.

**Assessment procedure:** Organize the packets into an age-appropriate format, simple to complex.

**Step 1.** Say, "This task requires you to put together pieces of a puzzle to form a picture. Here's an example." Provide the pieces, showing how the edges fit together in a specific order to match the line to form an image. "Each puzzle has its own image, with a different number of pieces to put together. What questions do you have?" Address any questions or concerns.

**Step 2.** Provide the pieces to the first puzzle. Observe the learner's eyes, mannerisms, and hands as they assemble the puzzle. Offer praise when the puzzle is solved. Continue this procedure until all the puzzles are solved or until one becomes too difficult.

**Assessment results:** This problem task is an informal assessment to acquire information regarding how a learner approaches a problem. Each learner is developmentally different with results highly variable. Watch for:

- The ability to “see” the whole when given isolated pieces.
- An approach to organization. Did the learner start with one piece and look for matching pieces? Did the learner use trial-and-error in assembly?
- Figure-ground visualization. Did the learner “see” the important lines or images?
- Patience. Did the learner easily give up when a match didn't happen?
- Processing speed. How quickly was the puzzle solved?
- Connecting. Did the learner connect pieces visually before moving them into alignment?
- Challenge. How did the learner handle frustration or the task when it became too difficult?
- Clues. Did the learner trace lines or other types of mannerisms that suggest looking for clues?
- Auditory. Did the learner talk aloud as an attempt to solve the problem?
- Rotation. Did the learner mentally rotate the images to fit or do it manually?
- Systematic. Did the learner repeat the same approach with each puzzle? For example, beginning with one piece in the same general location and building? Or randomly putting the pieces together before aligning the complete image?

This is not an exhaustive list of behaviors which can be observed during this problem-solving task. The following key concepts are conveyed through this assessment:

- An orderly, linear approach to the task. The way the puzzle is solved remains consistent.
- Directionality. Since the pieces are squares, usually learners will align the pieces in a horizontal fashion. A different approach suggests a more non-linear thinker.
- Trial-and-error implies a search for the “right” answer. [Kinetic].

- Talking through the problem implies a need to hear support. [Auditory].
- Rotating the pieces without touching them suggests a strong visual ability. [Visual].
- Low tolerance for difficulty implies a lack of options for solving problems.

For an example of a fifth grader: [Problem Solving Assessment with Gracie](#)

For an example of a first grader: [Problem Solving Assessment with Jackson](#)

### Interpreting Information

Informal assessment approaches provide valuable information for the classroom teacher and a strong beginning point for diagnosing more severe cases. Just as the problem-solving task provided information regarding the nature of how the learner processes a challenge, collecting the data on an individual provides a glimpse into the thinking and reading skills of the learner. The following are a few of the pieces related to the reading process which can be gleaned from informal assessments.

| Assessment Option    | Potential Information                                                                                                                                           |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IRI                  | ZPD<br>Listening, oral and silent reading levels<br>Miscues<br>Skills in word decoding, identification, and recognition<br>Current strategies for comprehension |
| Cloze procedure      | Ability to use prior word knowledge and skills<br>Successful use of context clues<br>Relationship between text and reader                                       |
| Spelling Inventories | Processing ability in relation to the code<br>Sequencing<br>Memory<br>Understanding of the “rules” for language<br>Ability to deconstruct                       |

|                 |                                                                                                                       |
|-----------------|-----------------------------------------------------------------------------------------------------------------------|
| Handwriting     | Mastery of the alphabet<br>Organization<br>What the brain “sees”<br>How the hand creates<br>Fine motor skills         |
| Chunking        | Size of short-term memory<br>Ability to see patterns (related to spelling)<br>Orderliness                             |
| Problem solving | Internal processing<br>Attention to details<br>Systematic or non-linear approach<br>Dimensional thinking (2-D or 3-D) |

Gathering this data provides a profile of how a learner approaches the task of reading. Strengths and weaknesses can be identified. Direct instruction targeting specific areas of need build skills, enhancing overall performance.

Informal reading inventories, Cloze procedures, and spelling inventories come with instructions for scoring the raw data. Other informal approaches, including handwriting samples, simple questions, chunking, and problem solving provide a glimpse into how a struggling reader processes information. Without an understanding of the results, intervention, if needed, will lack focus and intention, becoming both a waste of valuable time and limited support for the learner.