DRAFT 10/1/2013 -Michael Self-Bence, mselfben@fwps.org, 253-945-4135

Meaningful Evaluation: A Guide for Using Patterns of Strengths and Weaknesses to Identify and Help Students with Learning Disabilities

Overview

The most important thing that learning disability evaluations can accomplish is helping complex learners learn more effectively.

For this to happen, school psychologists must help parents, teachers, and even older students themselves, find meaning in evaluation results. School psychologists must use strategies that simplify complexity, and help every stakeholder participate meaningfully in discussions about what results tell us about a student's unique learning needs, and how the results can inform the development of effective instructional plans.

The evaluation approach presented here is a model for statewide application for using patterns of strengths and weaknesses (PSW), within either a *severe discrepancy* or *response to intervention* model, to identify and help students with learning disabilities.

This evaluation approach does require some development of expertise and assessment resources, but is practical for application, grounded in current science and theory, legal within current federal and state law, and most importantly, helpful for students.

What is the legal basis for PSW?

Nearly ten years ago, IDEA2004 offered new avenues to the identification of children with specific learning disabilities (SLD). Districts are no longer required to use severe discrepancy, and can now use a process based on student response to intervention (RTI), and may consider patterns of strengths and weaknesses (PSW) in identifying SLD.

In Washington State, the way that our SLD WACs (Washington Administrative Codes) are written, SLD eligibility can be established by five ways:

1) Severe Discrepancy (using the State Severe Discrepancy Tables)
2) Severe Discrepancy with narrowly defined *professional judgment* (to conclude that that there really is a severe discrepancy not shown by the application of the tables)
3) RTI
4) RTI with PSW
5) Severe Discrepancy with PSW

The specific WACs referring to Patterns of Strengths and Weaknesses (PSW):

WAC 392-172A-03055 Specific learning disability–Determination:
"When considering eligibility under (a) of this subsection [RTI or Severe Discrepancy], the group may also consider whether the student exhibits a **pattern of strengths and weaknesses** in performance, achievement, or both, relative to age, state grade level standards, or intellectual development, that is determined by the group to be relevant to the identification of a specific learning disability, using appropriate assessments, and through review of existing data."

FIVE QUESTIONS – A Framework for Considering PSW

A comprehensive evaluation for learning disabilities examines the instruction and intervention the student has received, gathers and examines information from parents, and assesses academic and cognitive skills in areas of suspected disability in order to answer five questions:

1) Is there **limited response to targeted instruction**?

2) Are there **LD risk factors** present?

3) Are **LD achievement markers** present?

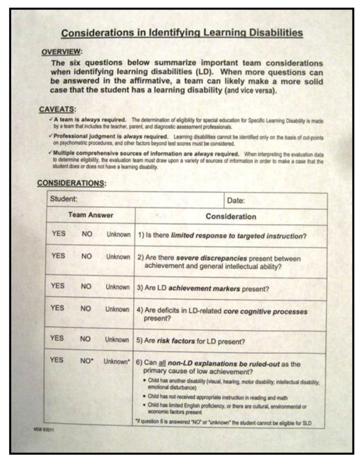
4) Are deficits in **LD-related cognitive processes** present?

5) Can all **non-LD explanations be ruled-out** as the primary cause of low achievement? (i.e., other disability, lack of instruction in reading and math, limited English proficiency, and cultural, environmental, or economic factors).

Additional(if district is using severe discrepancy): Are **severe discrepancies** present?

The evaluation group can use the *"Considerations in Identifying Learning Disabilities"* form (in Appendix) to guide its consideration of these questions. When more questions can be answered in the affirmative, a team can likely make a more solid case that the student has a learning disability, and vice versa.

Note that these questions can be overlapping. For example, identifying deficits in LD-related cognitive processes can help rule-out non-LD explanations as the primary causes of low achievement. For example, if a student with limited English proficiency demonstrates deficits in working memory (assuming valid assessment of working memory), that would help the team rule-out English proficiency as the primary cause of academic challenges.



Considerations in Identifying Learning Disabilities

OVERVIEW:

The six questions below summarize important team considerations when identifying learning disabilities (LD). When more questions can be answered in the affirmative, a team can likely make a more solid case that the student has a learning disability (and vice versa).

CAVEATS:

✓ **A team is *always* required.** The determination of eligibility for special education for Specific Learning Disability is made by a team that includes the teacher, parent, and diagnostic assessment professionals.

✓ **Professional judgment is *always* required.** Learning disabilities cannot be identified only on the basis of cut-points on psychometric procedures, and other factors beyond test scores must be considered.

✓ **Multiple comprehensive sources of information are *always* required.** When interpreting the evaluation data to determine eligibility, the evaluation team must draw upon a variety of sources of information in order to make a case that the student does or does not have a learning disability.

CONSIDERATIONS:

Student:	Date:
Team Answer	**Consideration**
YES NO Unknown	1) Is there ***limited response to targeted instruction***?
YES NO Unknown	2) Are there ***severe discrepancies*** present between achievement and general intellectual ability?
YES NO Unknown	3) Are LD ***achievement markers*** present?
YES NO Unknown	4) Are deficits in LD-related ***core cognitive processes*** present?
YES NO Unknown	5) Are ***risk factors*** for LD present?
YES NO* Unknown*	6) Can all ***non-LD explanations be ruled-out*** as the primary cause of low achievement? • Child has another disability (visual, hearing, motor disability, intellectual disability, emotional disturbance) • Child has not received appropriate instruction in reading and math • Child has limited English proficiency, or there are cultural, environmental or economic factors present. *If question 6 is answered "NO" or "unknown" the student cannot be eligible for SLD

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QUESTION 1 – Limited response to targeted instruction?

Answering this question is accomplished by observing the child in the classroom, talking with the teacher and interventionists, and reviewing data/evidence showing how the student has received instruction targeting the grade-level and foundational reading skills in sound awareness, phonics, fluency, vocabulary, and comprehension strategies, and/or handwriting, spelling, and composition skills, and/or arithmetic and applied math skills that the student is reported to be having challenges demonstrating.

Whether or not a formal RTI model is being used, have the teacher and interventionists tried to figure out what is breaking down and use targeted instruction with the child? If the student has not responded to everything that the teachers have given their best efforts to help with, that is an important observation.

Limited response to targeted instruction does not necessarily mean that the student has a *brain-based* learning disability, however, because other non-disability factors, like limited English proficiency, missed instruction, and environmental and economic factors, could be causing the low achievement. However, it does raise a "red flag" concern that a student **may** have a brain-based learning disability, so it is an important consideration.

QUESTION 2 – Are LD risk factors present?

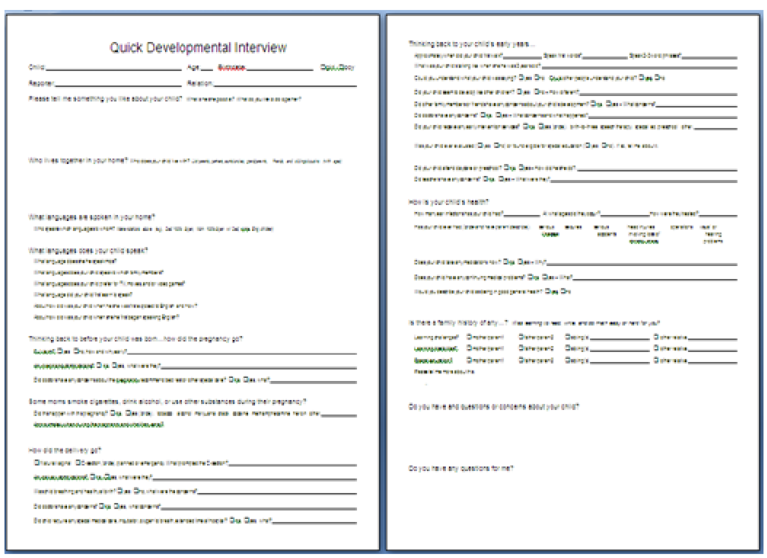
"LD risk factors" refers to anything that may have impacted the student's brain development, such as prenatal insult, exposure to teratogenic substances, brain injury, and disruption of normal development. LD risk factors also include early signs of possible brain differences indicated by developmental delays and early learning problems, as well as, possible hereditary influences.

Regarding heredity, it is important to gather information about family history of learning problems, learning disabilities, and special education. Children whose parents experienced reading difficulties are at a 30 to 60 percent increased risk for also experiencing reading problems. The risk is higher when the parent has been formally diagnosed with dyslexia. Genetic studies confirm that reading disabilities run in families. Children whose parents experienced spelling difficulties are at increased risk for also experiencing spelling problems. Children whose parents experienced math difficulties are at increased risk for also experiencing math problems, and those with other family members experiencing a learning disability are at increased risk for math difficulties (Fletcher, et al., 2006).

Regarding development, it is important to gather information about the child's prenatal experience, early history, developmental milestones, preschool years, and health and medical history. Although not an LD risk factor, it is also important to gather information about a child's dual-language learning history, if he/she has one, because this is critical information for interpreting assessment results.

Most districts have a standard parent questionnaire for gathering parent input, but a direct conversation is strongly recommended for several reasons. The information obtained will be superior, questions can be clarified for accuracy and probed for depth, and direct contact is a wonderful opportunity to build an authentic relationship with a parent. This relationship will be important when parents later participate in discussing evaluation results and educational planning.

The *Quick Developmental History* form in the Appendix is a suggested form for guiding the 15-20 minute conversation, in person or by phone, and for capturing parent input.


Quick Developmental Interview

Also as a suggestion, gathering developmental history can be completed <u>before</u> a child has been referred for special education. Knowledge of LD risk factors can be helpful for the pre-referral/RTI team in intervention planning. For example, if the teachers and interventionists are finding that a student is not responding to their best intervention efforts, knowing that the student suffered a serious concussion as an infant may prompt a full special education evaluation sooner than later.

QUESTIONS 3 & 4 – Are LD achievement markers and deficits in LD-related cognitive processes present?

"LD achievement markers" refers primarily to patterns of normative weaknesses in academic achievement test results that are indicative of learning disabilities. For example, children with word-level reading disabilities (i.e., dyslexia) who have difficulty applying phonetic skills to reading words, also experience related difficulties using phonetic skills to assemble words when spelling. In this case, "normative weaknesses" observed on measures of word decoding and spelling would represent LD achievement markers that are part of the pattern of strengths and weaknesses for the group to consider.

LD achievement markers also include qualitative patterns suggestive of learning disabilities that may be observed on standardized test performance, as well as, in classroom work products. For example, a student with dyslexia may exhibit extremely atypical decoding and spelling patterns, so it is not simply a quantitatively lower level of skill development, but a qualitatively different processing of text information. Such observations are LD achievement markers that are part of the pattern of strengths and weaknesses for the evaluation group to consider.

"Deficits in LD-related cognitive processes" refers to normative weaknesses in cognitive skills known to be important for academic learning (e.g., auditory processing, working memory). If normative weaknesses are observed, this is an important part of the pattern of strengths and weaknesses for the evaluation group to consider.

To answer these questions, standardized testing of academic and cognitive skills is needed. And Cross-battery assessment is a very accessible and useful approach for answering these questions.

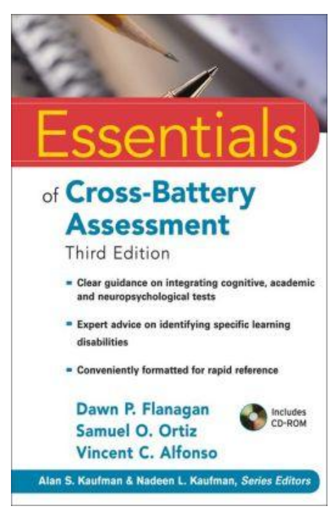
What is cross-battery assessment?

Cross-Battery Assessment employs a variety of academic and cognitive tests in order to provide a comprehensive and tailored assessment of every unique student learner. Based on the pioneering work of Flanagan, Ortiz, and Alfonso (2007), within the conceptual framework of the Cattell-Horn-Carroll (CHC) theory of cognitive abilities, strengths and weaknesses are examined to identify patterns diagnostic of learning disabilities.

CHC theory is the most current and comprehensive theory of cognitive abilities. CHC theory is grounded in psychometric science and research, with important overlaps with what we know from cognitive psychology and the neurosciences. It is no coincidence that all contemporary cognitive test batteries (e.g., WJ-3, WISC-4, DAS-2, KABC-2) are organized, at least in part, by CHC theory.

Essentials of Cross-Battery Assessment, 3rd Edition (Flanagan, Ortiz, & Alfonso, 2013) is a must-have resource for cross-battery assessment. This reference and guidebook includes explanations of CHC theory, tables linking cognitive abilities to reading, writing, and math achievement, a CD with a Culture-Language Interpretive Matrix (C-LIM) for helping to determine the impact of culture and language on performance, and tables categorizing cognitive tests by the broad and narrow abilities they measure (Appendix B).

This is a must-have resource, especially Appendix B!



ADDITIONAL QUESTION – Are there severe discrepancies?

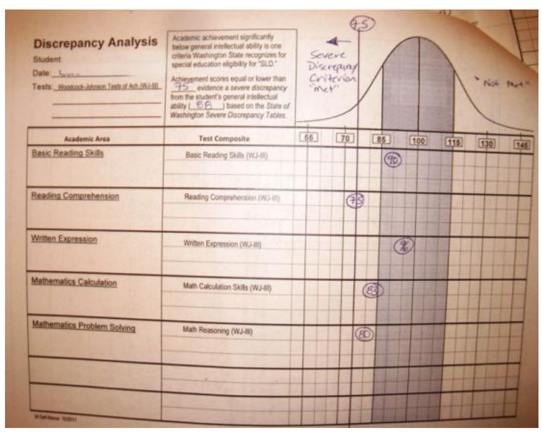
Although still permitted in federal and state law, severe discrepancy is not supported by research as a scientifically valid approach to identifying learning disabilities. Further, severe discrepancy is potentially harmful to children because it delays the provision of services until learning problems are too large to effectively remediate.

Another problem with severe discrepancy is that it only recognizes low achievement, but does not provide any means for ruling out non-disability explanations (e.g., low English proficiency) for why achievement is low. And another problem is that it does not yield meaningful results useful for helping complex learners.

Despite these serious short-comings, the reality is that severe discrepancy continues to be practiced because cultivating formal RTI systems takes resources districts may not have, and because severe discrepancy has been the practice for a very, very long time.

So for those districts that feel compelled to continue using severe discrepancy, a practical solution is to use severe discrepancy as one consideration within the framework for examining of patterns of strengths and weaknesses. Severe discrepancy does recognize low achievement as low, and within the framework the presence of severe discrepancy can strengthen a team's case that student has a learning disability.

But meeting the severe discrepancy criterion, given that it has no scientific validity, should no longer be regarded as the primary determining factor whether or not to provide special education to students with disabilities. If there is a pattern of strengths and weaknesses diagnostic of a learning disability, that student should be provided special education.



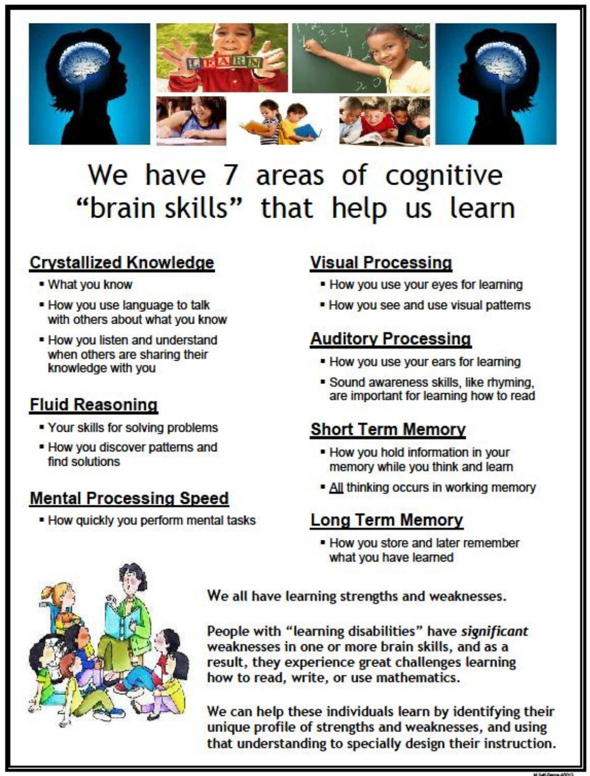
The evaluation group may use the *"Discrepancy Analysis"* form (in Appendix) to document severe discrepancy. In the evaluation report, the following language is recommended when discussing severe discrepancy:

> DISCREPANCY: Although "severe discrepancy" is not supported by research as a scientifically valid approach to identifying learning disabilities, academic achievement composite scores significantly below a general intellectual ability score (using the published OSPI tables) is one criteria Washington State recognizes for special education eligibility for "Specific Learning Disability" (See "Discrepancy Analysis" at end of report).
>
> Student's standard scores in basic reading skills (SS=90), written expression (SS=96), math calculation (SS=83), and math problem solving (SS=80) do NOT meet, and in reading comprehension (SS=75) DO meet the Washington State specific learning disability "severe discrepancy" criterion (for Student: SS=<75).

Meaningful, yet simple explanation of cognition and LD

A meaningful, yet simple, explanation of CHC and learning disabilities follows below. This is helpful at any time in the referral process, and essential before presenting evaluation test results, so that parents, teachers, and even older students can understand the results and have *"aha!"* insights about cognitive functioning, and participate meaningfully in the discussions using those insights to plan specially designed instruction for complex learners.

A helpful visual support for the conversation is the *"We all have 7 areas of cognitive "brain skills" that help us learn"* handout (in Appendix).



We all have 7 areas of cognitive "brain skills" that help us learn. That includes you, me, everyone around this table, and your child.

First, is your crystallized knowledge and language skills. It is all the things that you know…and how you use language to talk with others about what you know…and how you listen and understand when someone is sharing their knowledge with you. At this very moment, you are listening to me share what I know, and your brain is making connections with what you already know.

Second, is your fluid reasoning…your skills for solving problems. It is how you discover patterns and find solutions. In a moment, we are going to use our fluid reasoning skills to look for patterns in the test results, and see if we can find some helpful solutions for your child.

Third, is your <u>mental processing speed</u>…how quickly your brain can perform simple mental tasks…especially when under pressure to stay focused. Some brains are faster under pressure than others. Some brains have a harder time thinking as quickly, and that can impact school learning.

Fourth, is your <u>visual processing</u> skills…how you use your eyes for learning…how you see and use visual patterns for learning.

Fifth, is your <u>auditory or sound processing</u> skills…how you use your ears for learning. I'm not talking about how well your ears hear, but how your brain uses hearing information. Sound awareness skills, like rhyming, are important for learning how to read. Some children with learning disabilities have brains that that are not as strong in sound processing skills, and it makes it harder for them to learn how to read and write.

Next, is what we call <u>short-term memory</u>. This is how you hold information in your head while you are thinking and learning. All thinking occurs in working memory, so it is critical to all school learning. Some children with learning disabilities have brains that are not as strong in short-term working memory, and it makes it harder for them to learn in school.

The last area is what we call <u>long-term memory</u>. This is how you store and later remember what you have learned. You might think of short-term memory as the front porch where you process the information you are learning, and long-term memory as the library where you keep all you have learned. If the information in the library is well-organized, you can quickly find it, but if the information is scattered about, it can take your brain longer to find things.

Some children with reading disabilities have brains that are not as quick at finding word information from their long-term memory, and it makes it harder for them to learn how to read.

We all have learning strengths and weaknesses, or areas where we **glow** and areas to **grow**. People with learning disabilities have significant weaknesses in one or more brain skills, and as a result, they experience great challenges learning how to read, write, or use mathematics. We can help these individuals learn by identifying their unique profile of strengths and weaknesses, and using that understanding to specially design their instruction.

Just think how powerful! In about a minute you can bring parents, teachers, and even older students up to speed with a modern understanding of human cognition and learning…so they can then have meaningful participation in discussing the evaluation results!

Using cross-battery assessment to test hypotheses

Just like traditional assessment, cross-battery assessment involves testing academic and cognitive skills, with the advantage of a common theoretical framework to guide interpretation of results. And subtests from additional test batteries are used to help answer hypotheses that emerge as the testing unfolds.

Example 1: Based on classroom observations and the academic assessment results, the school psychologist ***hypothesizes*** that the child may have word-level reading disability or dyslexia. She gives the full WISC-4 battery, but it does not include auditory processing measures of phonological processing, the cause of dyslexia.

To ***test the hypothesis***, the school psychologist gives subtests from a different test that measure phonological processing, such as the CTOPP-2 Elision, Phoneme Isolation, and Blending Words tests.

Example 2: The school psychologist gives the full KABC-2 battery, which includes measures of memory span, that is, the amount of information the child can briefly hold in short-term memory. But the KABC-2 does not include measures of working memory, that is, the ability to *process* the information being held in short-term memory.

The school psychologist ***hypothesizes*** that the child may have challenges with working memory. To ***test the hypothesis***, he gives subtests from a different test that measure working memory, such as the DAS-2 Recall of Digits Backward and Recall of Sequential Order tests.

Example 3: A child scores low on the DAS-2 Rapid Naming test, which measures rapid automatic naming or RAN, a specific type of long-term memory associated with reading disabilities. The school psychologist ***hypothesizes*** a RAN deficit may be causing the child's reading problems. But the school psychologist does not want to conclude that the child has a reading disability based on just one low score that could have been a fluke.

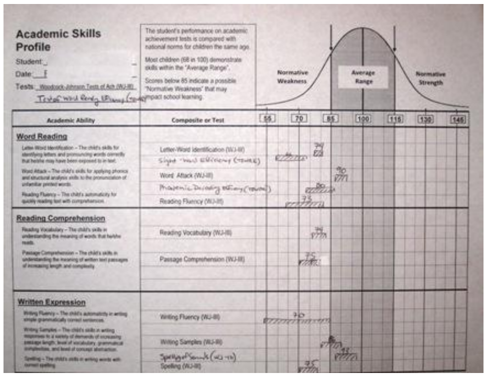
In order to ***test the hypothesis***, the school psychologist administers other tests of RAN, such as the CTOPP-2 Rapid Letter Naming & Rapid Digit Naming tests. If those results are also low, the school psychologist may confidently conclude that there is a normative weakness in rapid automatic naming.

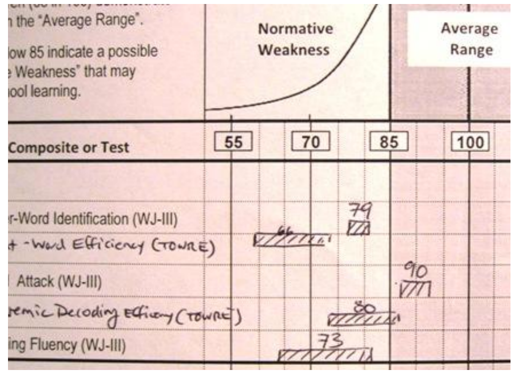
A simplified approach to cross-battery assessment

These are the basic steps in a simplified cross-battery assessment approach:

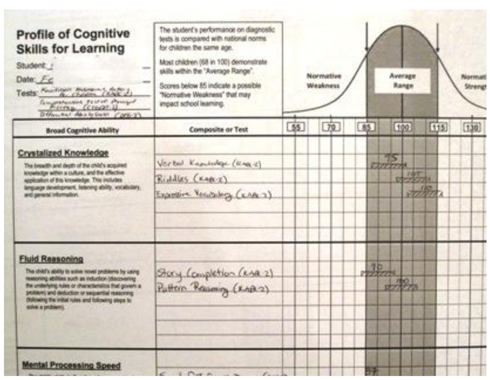
1) Administer academic tests in areas of referral concern (e.g., WJ-3, WIAT-2, KTEA-2).

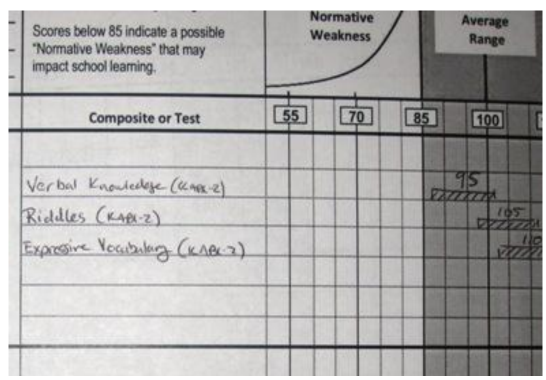
2) Plot age-based standard scores and 68% confidence intervals (actual or estimated using conversion tables in Appendix) on the *Academic Skills Profile* chart (in Appendix).





3) Administer primary cognitive battery (e.g., WISC-4, KABC-2). Plot standard scores and 68% confidence intervals (actual or estimated) on the Profile of *Cognitive Skills for Learning* chart (in Appendix).





4) Look at the *Profile of Cognitive Skills for Learning*. Have you measured all of the relevant cognitive abilities? Look at Appendix B in your *Essentials of Cross Battery Assessment* book to find other tests to measure the missing areas.

   Administer additional cognitive tests to make sure that all relevant cognitive abilities are measured. Plot results on *Profile of Cognitive Skills for Learning* chart.

5) In areas where normative weaknesses are indicated, administer additional cognitive tests to validate that low performance was not a fluke and truly represents a real cognitive weakness. You can find additional measures in Appendix B.

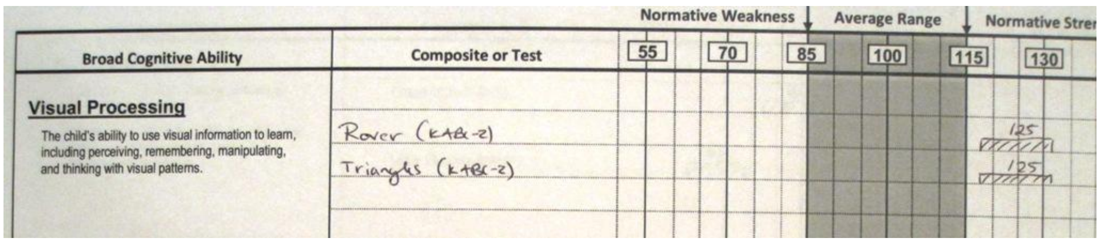
   The *Profile of Cognitive Skills for Learning* is not simply a format for visually presenting results to the evaluation group, but a tool to be used as the assessment unfolds to help the examiner, along with Appendix B, make decisions about other areas to assess. Grouping results on the Profile charts by narrow abilities can facilitate interpretation.

6) Interpret clustering of scores by broad and narrow abilities.

In order for our evaluation results to be useful, we need to be able to answer a very straightforward question:

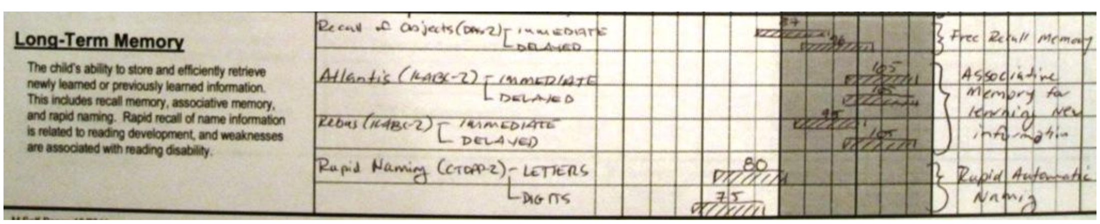
Is the child's skill in an area
Like OR ***Different***
than most children his/her age?

Example 1: The child's visual processing skills are ***more strongly developed*** than most children her age. She demonstrated normative strengths on two different measures of visual processing (KABC-2 Rover SS=125, Triangles SS=125).



Example 2: The child's long-term memory skills vary by the type of long term memory. She demonstrated free recall memory (DAS-3 Recall of Objects–Immediate Recall SS=87, Delayed Recall SS=96) and associative memory (KABC-2 Atlantis - Immediate Recall SS=105, Delayed Recall SS=105; Rebus – Immediate Recall SS=95, Delayed Recall SS=105) ***like*** most children her age.

However, she demonstrates a normative weakness in rapid automatized naming, with performance ***below most*** children her age (CTOPP-2 Rapid Naming Letters SS=80, Digits SS=75).



7) Finally, identify pattern linkages, based on research, between cognitive strengths/ weaknesses and academic strengths/weaknesses.

This student demonstrates achievement markers for reading disability, including normative weaknesses in reading fluency, word reading accuracy and fluency, and decoding fluency. She also demonstrates normative weaknesses in core cognitive skills associated with reading disabilities, specifically in rapid automatic naming.

Reading

Reading areas where there may be LD achievement markers

Word Specific – *child's skills for reading familiar words*
- Accuracy (e.g., WJ-3 Letter-Word Identification)
- Fluency (e.g., TOWRE Sight Word Efficiency)

Phonological Decoding – *child's skills for reading new words*
- Accuracy (e.g., WJ-3 Word Attack)
- Fluency (e.g., TOWRE Phonemic Decoding Efficiency)

Oral Reading Fluency of Text
- Make observations of accuracy and rate (e.g., WJ-3 Reading Fluency)

Reading Comprehension – *child's skills for demonstrating understanding for what he/she reads*
- Words (e.g., WJ-3 Reading Vocabulary)
- Text (e.g., WJ-3 Passage Comprehension)

Oral Comprehension – *for younger children, it is insightful to assess oral comprehension skills.*
- Naming vocabulary (e.g., WJ-3 Picture Vocabulary)
- Comprehension of spoken sentences (e.g., WJ-3 Oral Comprehension)
- Retell of orally presented stories (e.g., WJ-3 Story Recall)

Spelling – *children with word-level reading disabilities (i.e., Dyslexia) often show spelling difficulty*
- Familiar Words (e.g., WJ-3 Spelling)
- Unfamiliar Words (e.g., WJ-3 Spelling of Sounds)

Reading related cognitive processes

Crystallized Knowledge
- Language Development (e.g., KABC-2 Riddles), Lexical Knowledge (e.g., KABC-2 Verbal Knowledge), and Listening Ability (DAS-2 Verbal Comprehension) are important for reading at all ages, and become more and more important as children get older.

Fluid Reasoning
- Inductive Reasoning (e.g., KABC-2 Pattern Reasoning) and Sequential Reasoning (e.g., KABC-2 Story Completion) are moderately related to reading comprehension.

Mental Processing Speed
- Perceptual Speed (e.g., WJ-3 Visual Matching) is important for reading, especially K-5.

Visual Processing
- Orthographic Processing (e.g., PAL-2, ERA Rapid Orthographic Naming)

Auditory Processing
- Phonetic Analysis (e.g., CTOPP-2 Elision) and Phonetic Synthesis (e.g., CTOPP-2 Sound Blending) are critical for learning to read (K-5), and deficits cause word-level reading disability (i.e., dyslexia).

Short Term Memory
- Working Memory (e.g., DAS-2 Recall of Digits Backward) – All thinking occurs in working memory, so limitations may impact learning in all areas.

Long Term Memory
- Associative Memory (e.g., KABC-2 Atlantis Immediate and Delayed Recall, Rebus Immediate and Delayed Recall) may be important to reading
- Rapid Automatic Naming (RAN) (e.g., CTOPP-2 Rapid Letter/Digit Naming) is critical in K-5. RAN deficits are a central achievement marker for reading-fluency disabilities, and related cognitive process in word-level reading disabilities (i.e., dyslexia).

Writing

Writing areas where there may be LD achievement markers

Achievement markers for writing learning disabilities are indicated by patterns of normative weaknesses in handwriting, spelling, and/or text composition. A comprehensive writing evaluation examines the areas of writing in order to determine what is breaking down for the student:

Handwriting

- Make observations of student work and on spelling and writing assessments.

Spelling

- Familiar Words (e.g., WJ-3 Spelling)
- Unfamiliar Words (e.g., WJ-3 Spelling of Sounds)

Composition

- Fluency (e.g., WJ-3 Writing Fluency)
- Content (e.g., WJ-3 Writing Samples)

Valid assessment of composition skills, particularly higher level composition skills, is complicated by the fact that approaches to measurement may or may not reflect the task-demands students fact when writing in school (e.g., answering the writing prompts on the WJ-3 Writing Samples is not the same performance as writing an essay or report). Various achievement tests (e.g., WJ-3, KTEA-2, WIAT-2) approach writing from somewhat different angles, and examiners might explore how those different tests may contribute differently to the understanding of a student's writing skills.

Writing related cognitive processes

Unlike reading where a set of core cognitive process are well identified (i.e., phonological processing and RAN), our understanding of writing disabilities is less developed. Writing learning disabilities may be indicated by patterns of normative weaknesses in cognitive skills known to be related to writing.

Crystallized Knowledge

- Language Development (e.g., KABC-2 Riddles), Lexical Knowledge (e.g., KABC-2 Verbal Knowledge), and Listening Ability (DAS-2 Verbal Comprehension) are important for writing at all ages, and become more and more important as children get older.

Fluid Reasoning

- Inductive Reasoning (e.g., KABC-2 Pattern Reasoning) and Sequential Reasoning (e.g., KABC-2 Story Completion) are moderately related to reading comprehension, so as writing involves reading may also be related to writing.

Mental Processing Speed

- Perceptual Speed (e.g., WJ-3 Visual Matching) is especially important for writing in K-5.

Auditory Processing

- Phonetic Analysis (e.g., CTOPP-2 Elision) and Phonetic Synthesis (e.g., CTOPP-2 Sound Blending) are important K-5.

Short Term Memory

- Working Memory (e.g., DAS-2 Recall of Digits Backward) – All thinking occurs in working memory, so limitations may impact learning in all areas.

Long Term Memory

- Rapid Automatic Naming (RAN) (e.g., CTOPP-2 Rapid Letter/Digit Naming) is critical in K-5. RAN deficits are a central achievement marker for reading-fluency disabilities, and related cognitive process in word-level reading disabilities (i.e., dyslexia).

Math

Math areas where there may be LD achievement markers

Achievement markers for math learning disabilities are indicated by patterns of normative weaknesses in critical math skills, particularly computation skills. A comprehensive math evaluation examines the areas of math in order to determine what is breaking down for the student:

Computation

- Accuracy (e.g., WJ-3 Math Calculation; KeyMath-3 Addition & Subtraction, Multiplication & Division)
- Fluency (e.g., WJ-3 Math Fluency)

Problem Solving

- Concepts (e.g., WJ-3 Quantitative Concepts; KeyMath-3 Foundations of Problem Solving)
- Applications (e.g., WJ-3 Applied Problems; KeyMath-3 Applied Problem Solving)

Other areas

- The KeyMath-3 also includes measures of Mental Computation and Estimation, Algebra, Geometry, Measurement, and Data Analysis and Probability.

Math related cognitive processes

Unlike reading where a set of core cognitive process are well identified (i.e., phonological processing and RAN), our understanding of math disabilities is less developed. Math learning disabilities may be indicated by patterns of normative weaknesses in cognitive skills known to be related to math.

Crystallized Knowledge

- Language Development (e.g., KABC-2 Riddles), Lexical Knowledge (e.g., KABC-2 Verbal Knowledge), and Listening Ability (DAS-2 Verbal Comprehension) are important for math at all ages, and become more and more important as children get older.

Fluid Reasoning

- Inductive Reasoning (e.g., KABC-2 Pattern Reasoning) and Sequential Reasoning (e.g., KABC-2 Story Completion) are important to math development for children at all ages.

Mental Processing Speed

- Perceptual Speed (e.g., WJ-3 Visual Matching) is important for math, especially K-5.

Visual Processing

- Visual Spatial skills may be important for higher mathematics like geometry and calculus.

Short Term Memory

- Working Memory (e.g., DAS-2 Recall of Digits Backward) – All thinking occurs in working memory, so limitations may impact learning in all areas.

<u>**FIRST THINGS FIRST: How to get started**</u>

1) Obtain and read <u>Essentials of Cross-Battery Assessment, 3rd Edition</u> (Flanagan, Ortiz, & Alfonso, 2013). Familiarize yourself with a) the tables linking cognitive abilities to reading, writing, and math achievement, and b) tables categorizing cognitive tests by the broad and narrow abilities they measure (Appendix B).

2) Print the *Academic Skills Profile, Profile of Cognitive Skills for Learning,* and Conversion Tables. Use the Conversion Tables to estimate confidence intervals and plot onto the profiles the subtests from academic and cognitive assessments that you already administer. Use Appendix B to figure out where to plot different subtests.

   What do you see?
   - Depending on the cognitive test you use, you may find that your cognitive test is not comprehensive, that it does not cover all of the broad cognitive abilities.
   - Depending on the cognitive test you use, you may also find that some areas are under-represented, which means that you only have one subtest measuring the broad ability area.

   Look at Appendix B to identify other subtests that you could use to fill-in those areas. As you come to appreciate the strengths and limitations of your primary cognitive test, you will likely find yourself seeking out and learning new tests. This is how you start to build your cross-battery!

3) Form a study group with your colleagues. Share and exchange information and resources. Talk about your cases with each other. Scan and email copies of profiles you are working on along with your questions (e.g. What pattern do you see in this profile?). Use the *"We all have 7 areas of cognitive "brain skills" that help us learn"* to support your conversations.

4) When you are ready, pick an easy initial referral or reevaluation to try a cross-battery approach. Give yourself enough time to walk yourself through the process. Use the report templates in the Appendix here to simplify your report writing. Use the *We all have 7 areas of cognitive "brain skills" that help us learn* and visual results profiles to talk about results with your teachers and parents, and enjoy the "aha!" moments as parents and teachers start having insights about what you are talking about!

Still nervous about giving up severe discrepancy?

Continuing to use the severe discrepancy model is problematic for school psychologists, who are trained to be scientist-practitioners (i.e., our practice must be grounded in science), and who are bound to abide by an ethical code to do no harm. And yet, there may be nervousness among school psychologists, as well as special education administrators, special education teachers, and other educators, about moving away from severe discrepancy.

Severe discrepancy has been the status quo for as long as most can remember. And it is so clean and simple: Students either "do" or "do not" meet the criterion score for eligibility, and if anyone is upset with that result, the team can point the blame at the state severe discrepancy tables. "Don't be mad at us, the Table made the decision."

And to add to our nervousness, none of the alternatives (RTI or PSW) is as clean and simple and easy as severe discrepancy. A great deal of professional judgment and development of new systems and expertise is required.

Change, although scary, can also be exciting! My school psychology colleagues and I have found that the PSW framework presented here has invigorated our school psychology practice! It is exciting to have a shared theoretical framework (CHC) that is grounded in science and research, with important overlaps with what we know from cognitive psychology and the neurosciences! Auditory processing, working memory, and rapid automatized naming are *real* mental processes, and we can now use our understanding of these mental processes to diagnose and treat learning disabilities!

And perhaps most exciting, is explaining and showing results to parents, teachers, and older students in ways that they have "aha!" insights about cognitive functioning, and can now participate meaningfully in the discussions using those insights to planning specially designed instruction for complex learners!

Now that we have greater understanding, the next challenge is to figure out what to do to help complex learners. But this is the charge of the IEP team. Insights into how a student learns can help teachers and parents imagine what is like to be that student learner.

Like *walking in someone else's shoes* helps us appreciate alternative perspectives, cognitive results can help us *walk in the student's brain*. For example, "Imagine, Teacher, that your working memory skills are not as strong as most children your age, and that you can hold only one or two pieces of information in short-term memory while processing that information. How would you teach yourself? Now use your insight to design instruction for that student."

A point of professional debate

The simplified approach to using XBA presented here advocates that school psychologists organize all of the subtest results into visual clusters on the profile forms, according to broad and narrow abilities using Flanagan, et al's Appendix B. During the course of evaluation, this helps the school psychologist visually examine the data gathered up to that point, and generate possible hypotheses to test through further assessment. At the completion of the evaluation, the school psychologist interprets visual clusters of subtest results, looking for meaningful patterns of strengths and weaknesses relevant to understanding the child's learning.

This simplified approach holds that visual clusters of subtest results that have been meaningfully organized (using Appendix B), yields sufficient information for meaningful interpretation. The additional steps of using testing scoring programs or Flanagan et al's XBA program (DMIA) to generate statistical composites and make statistical comparisons between strength and weakness composites, may not be justified when meaningful patterns can be found by *simply looking at the organized data*. Further, the computer programs can unintentionally make it more difficult for the school psychologist to interpret the results.

First, scoring programs sometimes create composites of tests that do not measure the same broad ability. For example, the DAS-2 scoring program calculates the Processing Speed composite from the Speed of Information Processing test, which measures mental processing speed, and the Rapid Naming test, which measures RAN, a type of long term memory. So collapsing test results into a composite may obfuscate the results.

Second, when using Flanagan et al's XBA program to calculate broad composites, the school psychologist is limited to including only 4 subtests per composite. This limitation, according to Vincent Alfonso when presenting at the 2013 Seattle NASP conference, is due to the technical constraints of the MS Excel spreadsheet program used to design the DMIA program. So using the XBA program may limit the school psychologist from considering of wider sets of data. And if the more than 4 subtests in a broad domain were given, the school psychologist is presented with the additional challenge of selecting which subset of subtests to enter into the computer program, as well as, the perplexity when different subsets yield different composites.

Third, statistical composites are simply averages or weighted averages of subtest scores. Although an average may serve to summarize and reduce complexity, an average does not necessarily yield more meaningful information than can be obtained by visually observing how subtest scores cluster in meaningful patterns. But unfortunately, broad statistical composites may actually hide important differences in narrow abilities. For example, associative memory and rapid automatic naming are narrow abilities within the broad domain of long-term memory. In applied practice, particularly when considering reading disabilities, rather than making a general conclusion about long term memory, it is more meaningful to examine the specific aspects of long-term memory, such as associative memory for learning new information, and rapid recall of word information from long term memory, a critical skill for reading development.

Fourth, the belief that statistical composites are more valid due to the increased reliability is not necessarily true. Statistical reliability is increased by the number of observations or test items that contribute to the average. The more items, the more stable the average. This is why full-scale IQ scores are the most statistically reliable of all scores, because they include every item in the test, but note how we no longer believe that IQ, though most reliable, is the most valid measure of a person. When subtests are visually clustered, all of the data points that would contribute to the composite, if it were calculated, are still present in the visual clustering. So the visual clustering may be just as reliable and valid and meaningful.

Ultimately, school psychologists in the field will need to decide how to best apply XBA in their practice, and whether the extra time and effort needed to calculate and interpret composites, and to work around the perplexity computer programs may inadvertently yield, is justified when meaningful patterns for understanding the student can be found by *simply looking at the organized data.*

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Appendix

1) *Considerations in Identifying Learning Disabilities* (1 page)

This is a practical framework of 5 questions to help your evaluation group consider the evaluation data gathered from parents, observing instruction and intervention, and testing the student. You may think of the considerations in terms of "red flags" – the more LD red flags present, the more likely the student has a learning disability.

2) *Quick Developmental Interview* (2 pages)

Use this handy set of questions for guiding a 15-20 minute conversation with parents. Please do NOT use this as a self-completed questionnaire. Actual conversations with parents, in person, by phone, and/or via interpreter, are STRONGLY recommended because of the increased accuracy and depth of information gathered, as well as, the increased connection with parents that will be helpful when later discussing results and making educational plans.

3) *We have 7 areas of cognitive "brain skills" that help us learn* (1 page, in 3 languages)

Use this visual overview to quickly explain cognition to parents, teachers, and even older students, before sharing specific results. Translated by Edmonds' school psychologists Olga Caffee to Russian, and Annie Rueda-Brown to Spanish!

4) Tables for Estimating Confidence Intervals (3 pages)

Confidence intervals help us to avoid narrowing focusing on the specific test score, and to look for larger patterns across performance that are relevant to understanding the student. Using 68% confidence intervals is standard practice in XBA.

When available, always use actual 68% confidence intervals generated by the test scoring program. When not available, these tables can be used to estimate confidence intervals of subtests (standard score ±7). Use standard score ±5 to estimate confidence intervals of composites.

5) *Academic Skills Profile* (2 pages)

Use this to visually organize assessment results as the evaluation unfolds, as well as, to visually share results with parents and teachers. A picture is worth 1000 words.

6) *Profile of Cognitive Skills for Learning* (2 pages)

Use this to visually organize cognitive assessment results as the evaluation unfolds, as well as, to visually share results with parents and teachers. A picture is worth 1000 words.

7) *Communication Skills Profile* (1 page)

Use this to visually organize the results of your speech-language pathologist's communication evaluation. When sharing results, this can be helpful when making connections between the SLP's results and crystallized knowledge, auditory processing, and short-term memory.

8) *Profile of General Intelligence and Adaptive Behavior* (1 page)

Use this with intellectual disability evaluations to visually organize general intellectual ability and adaptive behavior scores.

9) *Discrepancy Analysis* (1 page)

Visually similar to the other profile forms, this can be used to document consideration of severe discrepancy with the OSPI tables.

10) *SLD Evaluation Checklist* (2 pages)

11) *Simple Outline for XBA Cognitive Report* (5 pages)