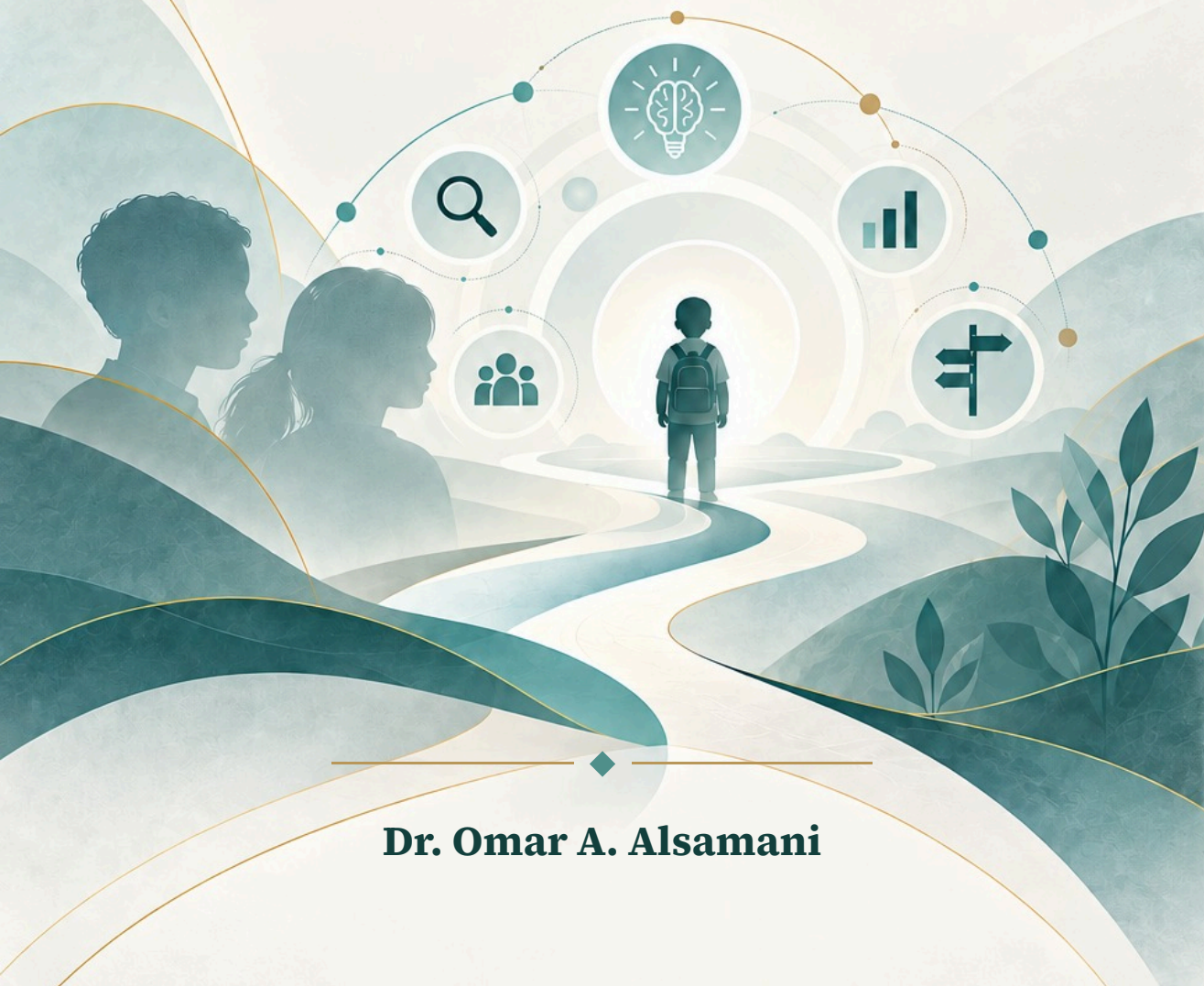


Diagnosis and Identification of Exceptional Learners

Learners with disabilities, the gifted
and the twice-exceptional



Dr. Omar A. Alsamani

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Chapter 8

Learning disabilities

A bright student understands a story when he hears it and discusses its events in depth, then stumbles over a single line of it on the page; in this contradiction lies the essence of learning disabilities. In this chapter we consider how to tell them apart from weakness that stems from inadequate instruction, an unmastered language, or low general ability.

Scene from a third-grade classroom

In science class, the teacher asked why ice melts faster in the sun. Ahmed's hand went up first, and he explained the answer in words that surprised her. An hour later, in Arabic class, he was asked to read a short, fully vowelized paragraph. He halted at every word. He read "سَحَابَةٌ" (saḥāba, "cloud") as "سَحَبَةٌ," dropping the long vowel; he read "فَرِحَ" (fariḥa, "he was glad") as "فَرَحَ," turning the kasra into a fatha even though it was printed right in front of him; and he guessed at words from their first letters. Then his face reddened, and he said, "My eyes are tired."

His mother says he hates homework and cries before spelling tests, and that his older brother "was exactly the same and still hates reading."

The scene carries many of the hallmarks of dyslexia: a gap between oral comprehension and reading; decoding errors of the kind commonly seen among struggling readers of Arabic, such as dropping long vowels and swapping short vowels; and, alongside these, avoidance and a family history. Notably, Ahmed's errors lie in linking letters to their sounds, which we will examine as the core of dyslexia. Yet the scene alone does not amount to evidence for a diagnosis, and we return to Ahmed in the first case.

Chapter objectives

After studying this chapter, the reader should be able to:

- 1 Distinguish the educational term “learning disabilities” from the diagnostic term “specific learning disorder,” and compare how the category is defined in the DSM, the ICD, US law, and Saudi regulations.
- 2 Match a student's data against the four criteria for specific learning disorder, and specify the affected domain, the subskill, and the level of severity.
- 3 Classify a struggling reader's profile into one of the four patterns of the simple view of reading, and identify what must be measured to confirm the classification.
- 4 List the early warning signs in reading, writing, and mathematics for a student at a given age.
- 5 Select tools for assessing phonological processing, fluency, achievement, number sense, and written expression, and explain the limits of their use with Arab students.
- 6 Apply to a new case a decision pathway that combines response-to-intervention data, achievement, and exclusion, and justify the decision on each criterion.
- 7 Distinguish learning disabilities from conditions that resemble them, including developmental coordination disorder, and propose an assessment procedure for each common co-occurring condition.

Introduction

At their core, learning disabilities involve a contradiction that often gives teachers pause: a student understands what he hears and discusses it in depth, then stumbles over a single line of text or a simple calculation. The diagnostic task is to distinguish this difficulty from weakness explained by inadequate instruction, an unmastered language, low general ability, or a sensory impairment. The question grows more complex in the Arab context, given the distinctive features of Arabic reading in its vowel marks, long vowels, and morphological structure, and given how few standardized Arabic tools exist in this area.

We open the chapter by defining the concept of learning disabilities and its terminology (Section 8.1), then present the diagnostic criteria, the meaning of “substantially below” achievement, and the specifiers (Section 8.2). We then turn to dyslexia in light of the simple view of reading, phonological components, and the features of Arabic reading (Section 8.3), followed by difficulties in writing and mathematics (Section 8.4), early warning signs (Section 8.5), the decision pathway (Section 8.6), and instrument profiles (Section 8.7). We apply all this to four cases (Section 8.8), move on to differential diagnosis and co-occurrence (Section 8.9), and close with the Saudi and Arab context and the tools available within it (Section 8.10).

8.1 What are learning disabilities?

Specific learning disorder (Specific learning disorder) is a neurodevelopmental disorder that shows itself as persistent difficulty in learning and using basic academic skills, such as reading words, understanding what is read, spelling, written expression, calculation, or mathematical reasoning. In education systems it is known as **learning disabilities** (Learning disabilities). The word **specific** means that the difficulty lies in one or more particular domains and is not explained by low general ability, a sensory impairment, or a lack of instruction.

In this chapter we follow a single rule of terminology: “learning disabilities” for the educational category served in schools, and “specific learning disorder” when we speak of the DSM criteria. The two terms are close in substance, but the first is governed by an education system and the second by a clinical manual, and a student may qualify under one and not the other when the criteria differ.

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (**DSM-5-TR**), uses a single label and then specifies the affected domain. Common terms such as dyslexia, dyscalculia, and dysgraphia are used to describe particular patterns of difficulty, and the manual accepts the first two as alternative terms for describing them. Dyslexia is the most common and most studied of these patterns. Researchers define it as difficulty with accurate or fluent word recognition and with spelling and decoding, typically resulting from a deficit in the phonological component of language, and unexpected in relation to the student’s other abilities and to the effective instruction he has received (Lyon et al., 2003).

□ Comparison with ICD-11

The International Classification of Diseases, Eleventh Revision (**ICD-11**), calls this category “developmental learning disorder”

(**Developmental learning disorder**) and distinguishes subtypes within it: with impairment in reading, with impairment in written expression, with impairment in mathematics, and with other specified impairment of learning. It agrees with the DSM in requiring significant and persistent difficulty that emerges as the skills are taught in the early school years, and in excluding intellectual disability, sensory impairment, neurological and motor disorders, lack of availability of education, lack of proficiency in the language of instruction, and adverse psychosocial circumstances. It differs on one point of practical consequence: it describes performance in the affected skill as markedly below what would be expected for **both chronological age and the general level of intellectual functioning**, thereby keeping intellectual ability in the picture, whereas Criterion B of the DSM settles for a comparison with age (World Health Organization, 2024). We will see the effect of this difference in Yazan’s case (8.8).

III. For the specialist: The definition in US law and the three identification methods

The US Individuals with Disabilities Education Act (**IDEA**) defines “specific learning disability” as a disorder in one or more of the basic psychological processes involved in understanding or using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations. It excludes learning problems that are primarily the result of visual, hearing, or motor disabilities, of intellectual disability, of emotional disturbance, or of environmental, cultural, or economic disadvantage (IDEA, 2004; U.S. Department of Education, 2006, 34 CFR §300.8(c)(10)).

The implementing regulations specify **eight areas** in which the difficulty can be established: oral expression, listening comprehension, written expression, basic reading skills, reading fluency skills, reading comprehension, mathematics calculation, and mathematics problem solving (§300.309). They also set out **three methods of identification**: a state may not require a severe discrepancy between intellectual ability and achievement, must permit a process based on the student’s response to scientific, research-based intervention, and may permit other alternative research-based procedures (§300.307). The third method usually encompasses **patterns of strengths and weaknesses** models, which the regulations describe as “a pattern of strengths and weaknesses in performance, achievement, or both, relative to age, State-approved grade-level standards, or intellectual development” (§300.309(a)(2)(ii)). Chapter 6 presents these three models and the critiques of them (6.2 to 6.5). Whatever the method, the team must confirm that the student received appropriate instruction in reading and mathematics delivered by qualified teachers, and that repeated data on his progress were collected (§300.309(b)).

❓ Common misconceptions

- **“Dyslexia means the child sees letters backwards.”** Reversing letters and their order is common among all children when they begin learning to write. The core problem in dyslexia is linguistic and phonological, in connecting sounds to letters, not visual. That is why the errors of a struggling reader of Arabic are mostly errors of sounds, vowel marks, and syllables, as in Ahmed’s scene.
- **“The student is lazy; if he tried, he would read.”** Many students with learning disabilities put in far more effort than their peers to reach a poorer result. What looks like laziness is often the avoidance of a painful task.
- **“He will grow out of it.”** Learning disabilities do not disappear with waiting. Early intervention is far more successful than late intervention.
- **“Poor handwriting is a learning disability in writing.”** Poor handwriting alone is not enough for this diagnosis, and its source may be motor rather than linguistic (see 8.4).

8.2 Diagnostic criteria

The **DSM-5-TR** requires four criteria, all of which must be met together (American Psychiatric Association [APA], 2022):

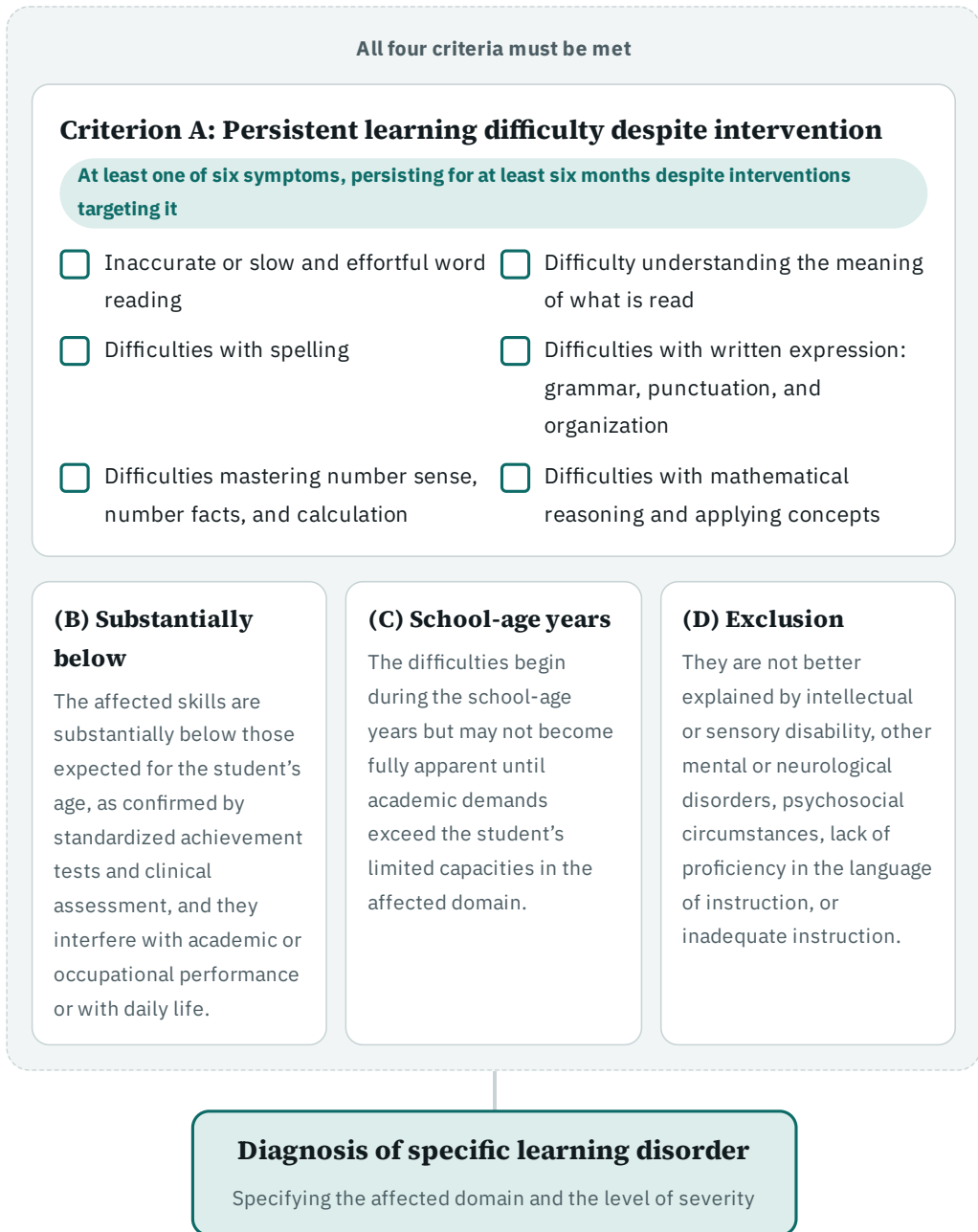


Figure 8.1: DSM-5-TR criteria for specific learning disorder. Note that Criterion A requires the difficulty to persist despite intervention; the diagnosis therefore presupposes that the student has first received appropriate instruction.

What does “substantially below” mean?

For the greatest diagnostic certainty, the DSM suggests an achievement score of about 1.5 standard deviations or more below the mean, that is, about 78 or lower on a test with a mean of 100 and a standard deviation of 15. It does, however, allow a more lenient threshold, down to about one standard deviation, or roughly 85 or lower, when other evidence supports the difficulty, such as data showing nonresponse to intervention, clinical assessment, or school history. Note that the manual **does not require a discrepancy** between intelligence and achievement. The **discrepancy model** once required a large gap between an intelligence score and an achievement score, but it drew extensive criticism, including the charge that it waits for the gap to widen and so delays intervention (see Chapter 6, 6.2).

For individuals aged 17 and older, the manual allows a **documented history** of impairing learning difficulties to substitute for standardized assessment under Criterion B (APA, 2022). This matters in assessing university students and adults whose difficulties were never assessed at school, or for whose ages no standardized tools exist in their language. Such a history includes whatever documents the difficulty independently of the student’s own report: school reports, previous support services, or testing accommodations.

Specifiers: domain and severity

Table 8.1: Domains of specific learning disorder and their subskills in the DSM.

Area	Subskills specified in the diagnosis
Reading	Word reading accuracy, reading rate or fluency, and reading comprehension
Written expression	Spelling accuracy, grammar and punctuation accuracy, and clarity and organization of written expression
Mathematics	Number sense, memorization of arithmetic facts, accurate and fluent calculation, and accurate mathematical reasoning

Note that the written expression skills in Table 8.1 do not include handwriting quality. Poor handwriting alone does not suffice for a diagnosis of specific learning disorder in written expression; its source must be sought, as Section 8.4 explains.

Severity is then specified: **mild**, where the student can compensate with accommodations and support; **moderate**, where he needs intensive, specialized teaching for part of his schooling; and **severe**, where he needs intensive, individualized teaching for most of his school years and may not perform the skills efficiently even with support.

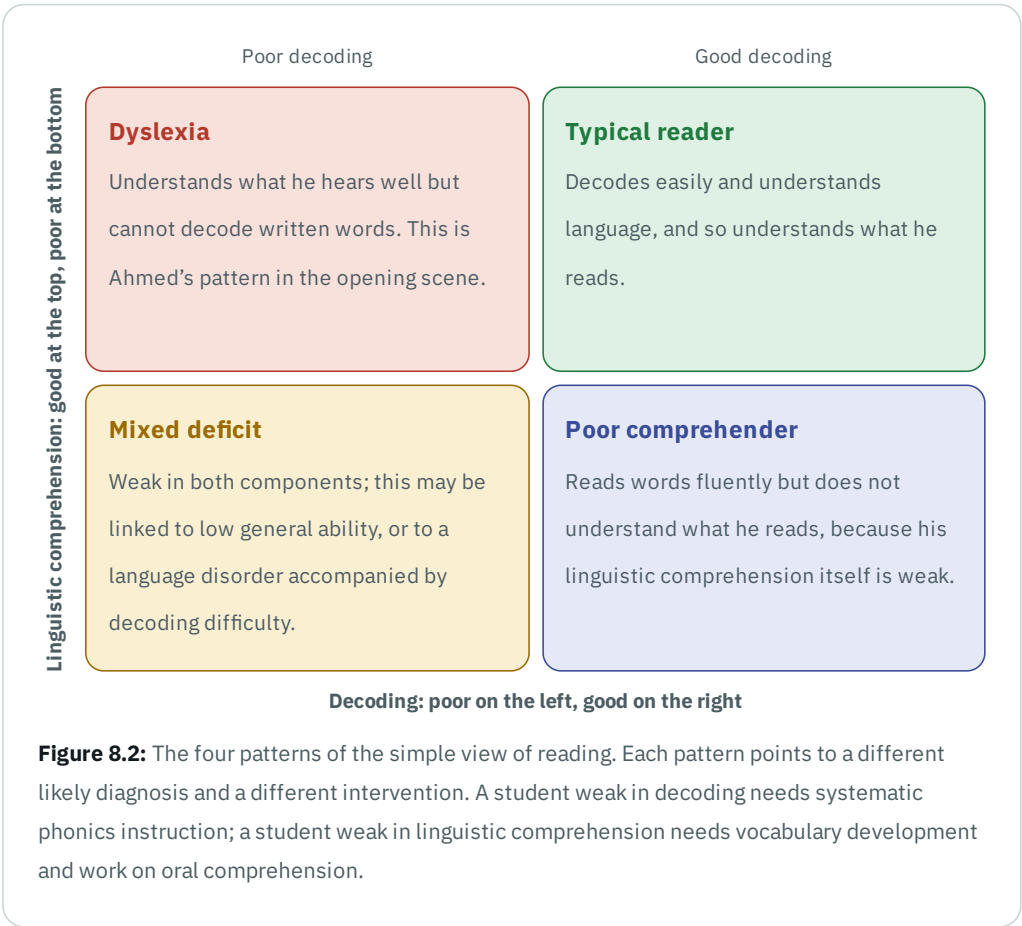
8.3

Dyslexia and reading in Arabic

The simple view of reading

One of the most useful frameworks for understanding reading difficulties is a model known as the **simple view of reading** (Simple view of reading). The model holds that reading comprehension is the product of two components multiplied together: **decoding**, the conversion of the written word into its spoken form, and **linguistic comprehension**, the understanding of words and

sentences when they are heard (Gough & Tunmer, 1986). Because the relation is multiplicative rather than additive, weakness in either component undermines reading comprehension, however strong the other may be. These two components give rise to four patterns:



The model bears directly on diagnosis. If a report shows low reading comprehension, both decoding and oral linguistic comprehension must be measured to establish which one is the source of the problem, and hence the type of difficulty.

Phonological components

In most cases, dyslexia stems from a weakness in **phonological processing** (**Phonological processing**), that is, in the way the brain handles the sounds of language. It is measured in three areas:

- **Phonological awareness:** the ability to perceive and manipulate the sounds of a word, as when a child knows that “باب” (bāb, “door”) begins with the sound /b/, deletes a sound from a word, or blends separate sounds into a word.
- **Phonological memory:** holding a sequence of sounds briefly in memory, as in repeating a nonsense word just heard.
- **Rapid naming (Rapid automatized naming, RAN):** the speed of naming a series of familiar symbols, such as colors, letters, or digits. Slowness here is associated with slow reading.

The importance of these components extends to Arabic. A study of Arabic-speaking children found that phonological processing skills contribute to word reading and reading comprehension in Arabic just as they do in other languages (Taibah & Haynes, 2011). Measuring them in Arabic, however, requires attention to the features of the language.

What sets reading in Arabic apart?

Most diagnostic tools and research on dyslexia were built on English. Arabic differs from English in features that affect both how the difficulty appears and how it is measured (Elbeheri et al., 2006):

The shift from vowelized to unvowelized text

كَتَبَ → كُتِبَ

Children learn to read with fully vowelized texts in which the relationship between letter and sound is nearly regular; the vowel marks are then gradually withdrawn. Some students' difficulties surface when they are asked to infer the vowels from context (Abu-Rabia, 2001). Among the errors common in struggling beginners is confusing short vowels with long vowels, as in Ahmed's scene. Decoding should therefore be measured with both vowelized and unvowelized texts.

Diglossia (Diglossia)

“شَنُو” → “مَاذَا” (shinū → mādihā, “what”)

Children learn to read in Modern Standard Arabic, which differs in its sounds and vocabulary from the colloquial dialect they speak. They are thus learning to read and, at the same time, learning what is almost a new language (Saiegh-Haddad, 2003). This makes linguistic comprehension in Standard Arabic a separate component of the assessment.

Changing letter forms and dots

ع · ه · ع · ب · ت · ث · ن

A letter's shape changes with its position in the word, and many letters look alike, distinguished only by their dots. This adds a visual load early in learning.

Morphological structure

كُتِبَ · كَاتِب · مَكْتُوب · مَكْتَبَة
(kataba, kātib, maktūb, maktaba)

Arabic words are built from roots and patterns. Morphological awareness (Morphological awareness), the perception of a word's structure as a root and a pattern, helps the reader recognize unvowelized words, and weakness in it may contribute to the difficulty.

Figure 8.3: Four features of Arabic reading that any assessment of dyslexia in Arabic should take into account.

8.4 Difficulties in writing and mathematics

Reading receives most of the attention in research and practice, but a student may be referred because of writing or mathematics, and may have difficulties in more than one domain. Each domain raises its own diagnostic questions.

Written expression and handwriting

Writing progresses from forming and copying letters, to spelling, to building sentences, paragraphs, and organized texts. By impairment in written expression, the DSM means three skills: spelling accuracy, grammar and punctuation accuracy, and clarity and organization of expression (APA, 2022). Poor handwriting and slow handwriting do not, on their own, suffice for this diagnosis, since they may arise from a motor rather than a linguistic source.

Hence the importance of **developmental coordination disorder (Developmental coordination disorder, DCD)** in differential diagnosis. It is a neurodevelopmental disorder in which the acquisition and execution of coordinated motor skills fall substantially below what is expected for the child's age and opportunities for learning, so that the child appears clumsy, slow, or imprecise in skills such as catching a ball, using scissors, and handwriting. The difficulty interferes with daily activities or academic productivity, begins in the early developmental period, and is not explained by intellectual disability, visual impairment, or a neurological condition affecting movement (APA, 2022).

A student with poor handwriting may be referred as a case of “writing difficulty,” only for the assessment to reveal that his spelling and sentence structure are sound when he dictates his text orally or types it on a keyboard, and that his difficulty lies in fine motor control. Good assessment therefore compares three kinds of performance: copying a given text by hand, spelling from dictation, and free composition written by hand and then typed or

produced orally. An occupational therapist is brought in when a motor source is suspected. The two disorders may also co-occur in the same student, in which case both are assessed.

Mathematics: number sense and arithmetic fluency

Learning mathematics begins with what is called **number sense (Number sense)**: an intuitive grasp of quantities and their relationships, as when a child sees without counting that a small set has three objects, that 8 is clearly larger than 5, and that 49 is closer to 50 than to 40, and can place a number in its approximate position on a number line. A longitudinal study found that number competence in kindergarten predicts mathematics achievement years later (Jordan et al., 2009); early weakness in it is therefore a sign worth monitoring.

In its typical form, **dyscalculia** combines three features: weak number sense; difficulty retrieving arithmetic facts automatically, so that the student keeps counting on his fingers for problems his peers have long since memorized; and slow, inaccurate calculation. Mathematical reasoning may be relatively spared, so that the student chooses the right operation and then makes errors in carrying it out (Fletcher et al., 2019). The assessment therefore measures:

- **Number sense:** comparing two numbers, estimating on a number line, and perceiving small quantities without counting.
- **Arithmetic fluency (Arithmetic fluency):** accuracy and speed together in basic facts and operations. A student who arrives at the correct result only after lengthy counting has not achieved fluency, even if the answer is right.
- **Mathematical reasoning:** solving word problems, with the problems read aloud to the student so that reading difficulty is not confused with difficulty in mathematics.

Math anxiety is common among these students, and it may be a result of repeated failure rather than its cause. The assessment should therefore ask: does performance improve when the pressure is removed, for example when the student solves the same problems individually and untimed? If it does not, anxiety alone does not explain the weakness.

8.5 Early warning signs

Table 8.2: Early warning signs in reading, writing, and mathematics by stage.

Stage	In reading and writing	In mathematics
Before school	Difficulty distinguishing words that sound alike at the beginning or end, and difficulty learning letter names, together with a family history of reading difficulties	Difficulty counting in sequence, linking a number to a quantity, and comparing two small quantities
Early grades	Very slow progress in linking letters to sounds, persistent confusion between short and long vowels, guessing words from their first letters or from pictures, avoidance of reading aloud, and marked slowness in forming and copying letters	Continued finger counting for simple addition, difficulty memorizing basic facts, confusion of mathematical symbols, and difficulty placing numbers on a number line
Upper elementary and middle school	Slow, effortful reading, markedly weak spelling, avoidance of writing, short and poorly organized written texts, and comprehension that far outstrips reading	Difficulty with multistep problems, repeated procedural errors, slow fact retrieval that hampers learning fractions and algebra, and anxiety about mathematics

 For the teacher: The question that reveals a great deal

Read a passage from the student's textbook aloud to him, then ask him about it. Next, have him read a similar passage on his own, and ask him about that one. If he understood what he heard well but did not understand what he read because he stumbled over the words, the problem most likely lies in decoding. If he understood neither, the problem may lie in linguistic comprehension or in general ability. This simple check is not enough for a diagnosis, but it applies the simple view of reading in two minutes. Its counterpart in mathematics is to read a word problem to the student and ask, "What will you do to solve it?" before he calculates; you will then know whether he is stumbling over reasoning or over calculation.

8.6 The decision pathway

This pathway follows a hybrid model that combines three kinds of evidence (Fletcher et al., 2019): inadequate response to intervention, meaning that the student has not progressed as he should despite receiving additional instruction of proven effectiveness, which is the heart of the response-to-intervention model; low achievement; and the exclusion of other explanations (see Chapter 6, 6.3 and 6.5). The first kind of evidence is usually gathered through curriculum-based measurement (see Chapter 4, 4.4).

1 Universal screening

A brief measure given to every student in the class three times a year, such as reading fluency, letters and sounds, or arithmetic facts.

↓ Low performance

2 Intervention and progress monitoring

Additional instruction of proven effectiveness in a small group, with weekly monitoring, followed by more intensive intervention for students who do not respond. This documents Criterion A: persistence for six months despite intervention.

↓ Inadequate response: referral

3 Comprehensive assessment

Begins by confirming that hearing and vision are intact before any diagnostic instrument is used. Then come a standardized achievement test in the affected domain and its subskills; assessment of the related processes, such as phonological processing and rapid naming, or number sense; oral linguistic comprehension; an ability test to rule out intellectual disability; and a review of attendance, prior instruction, and language.

↓

4 Matching against the criteria

Does the difficulty persist despite intervention? Is achievement substantially below expectations? Did it begin during the school years? Have other explanations been ruled out?

↓

Are all four criteria met?

Yes



Diagnosis of specific learning disorder

No



No diagnosis

Specifying the domain, the subskill, and the severity

The better explanation is addressed, and support and monitoring continue

Figure 8.4: The decision pathway for learning disabilities. The first and second stages take place in the classroom before referral and generate the evidence that Criterion A requires. Intervention must never become a reason to delay an assessment that the family requests or that the evidence points to.

8.7 Instrument profiles

Learning disabilities call for tools that measure the affected skill precisely and that also measure the processes behind it. Here we present six international tools covering reading, mathematics, and writing, with the caveat that all of them are built on English and are therefore suitable for Arab students only in adapted and standardized versions, or through Arabic tools built on the same idea. The aim of presenting them is for readers to know what should be measured and how it should be interpreted, and to know what to ask of any Arabic tool.

The profiles follow a single template. Each profile's table has fields for reliability, classification accuracy, and the year the norms were collected. Where we have not verified a figure in the technical manual itself, we have written "In the technical manual," and we have not carried over figures from secondary sources. Examiners should read these values from the manual before relying on the tool (see Chapter 2). This book does not publish the items of any test; the examples in the profiles were prepared by the author to illustrate the type of task.

CTOPP-2 Comprehensive Test of Phonological Processing, Second Edition

Phonological processing

The idea

When a student struggles with decoding, we need to know the reason for his weakness as well as its extent. This test measures the three aspects of phonological processing to which dyslexia is usually traced: phonological awareness, phonological memory, and rapid naming (Wagner et al., 2013).

What it looks like

An examiner's booklet, rapid naming plates, audio recordings for some tasks, and a record form. It has two age versions: the first for ages 4 to 6, the second for ages 7 to 24. Its task types include deleting a sound from a word and saying what remains, blending separate sounds heard on a recording into a word, repeating digits or nonsense words, and naming rows of digits, letters, colors, or objects as quickly as possible.

A scene from administration

The examiner places in front of a third grader a plate printed with rows of familiar letters and says, "Name the letters out loud, from the start of each row to the end, as fast as you can," then starts the stopwatch. The student names every letter correctly but takes nearly twice the usual time. The examiner records both the time and the errors.

Table 8.3: Comprehensive Test of Phonological Processing (CTOPP-2) at a glance.

Purpose	Identifying the source of phonological weakness and guiding intervention, as well as supporting diagnosis
Ages	4 to 24 years, in two age-based forms
Edition and year	Second, 2013
Publisher	PRO-ED
Qualification level	An examiner trained in administering and interpreting individually administered standardized tests, in accordance with the publisher's requirements

Time	About 40 minutes
Score types	Scaled scores for the subtests (mean 10, SD 3), and composite scores for phonological awareness, phonological memory, and rapid naming (mean 100, SD 15)
Cutoff scores	No diagnostic cut-off; scores are interpreted by descriptive range and in comparison with reading performance
Reliability	In the technical manual
Classification accuracy	Not designed for classification on its own
Year of norm collection	In the technical manual
Arabic version	We know of no published standardized Arabic version at the time of writing. Arabic tasks built on the same idea have been used in research (Taibah & Haynes, 2011), but they must not be interpreted against the original norms

How are the results interpreted?

The profile is read in light of reading performance. Low phonological awareness together with weak decoding of nonsense words points to a core phonological weakness that calls for systematic phonics instruction. Low rapid naming on its own, with acceptable accuracy, points to a problem of fluency more than of accuracy. The combination of the two weaknesses, sometimes called the double deficit, is generally associated with more severe difficulty.

Its limits

It was built on the sounds and syllables of English, so translating its items does not yield an Arabic tool: a translated word differs in its number of sounds and its syllable structure, and its difficulty changes accordingly. A low score

indicates weakness in the process, and it establishes a learning disability only when it coincides with weakness in reading itself.

TOWRE-2 Test of Word Reading Efficiency, Second Edition

Decoding fluency

The idea

A skilled reader reads words accurately, quickly, and effortlessly. This brief test measures accuracy and speed together, and it separates the recognition of familiar words from pure decoding (Torgesen et al., 2012).

What it looks like

A card with a list of real words of increasing difficulty, which the student reads as quickly as he can in 45 seconds, and a second card with a list of nonsense words (**Pseudowords**), which he reads in another 45 seconds. The test has four equivalent forms, so it can be repeated to monitor progress without the student remembering the list.

A scene from administration

A fifth grader reads the list of real words at an acceptable pace, then slows down considerably on the list of nonsense words, turning some of them into real words that resemble them. The examiner records the number of words read correctly on each list and notes the types of errors in the margin.

Table 8.4: Test of Word Reading Efficiency (TOWRE-2) at a glance.

Purpose	Measuring word reading fluency and decoding, and progress monitoring through its equivalent forms
Ages	6 to 24 years
Edition and year	Second, 2012

Publisher	PRO-ED
Qualification level	An examiner trained in administering and interpreting individually administered standardized tests, in accordance with the publisher's requirements
Time	About 5 to 10 minutes
Score types	Standard scores for the two subtests and for a total word reading efficiency index (mean 100, SD 15)
Cutoff scores	No diagnostic cut-off
Reliability	In the technical manual
Classification accuracy	In the technical manual
Year of norm collection	In the technical manual
Arabic version	We know of no published standardized Arabic version at the time of writing. The closest we found is a measure of Arabic word recognition fluency for monitoring the progress of first graders (Abu-Hamour, 2014b), which is a monitoring tool, not a diagnostic test

How are the results interpreted?

A student who reads real words acceptably but stumbles a great deal over nonsense words usually relies on memorization and guessing and lacks decoding skill. Low scores on both subtests, by contrast, indicate a general weakness in reading fluency.

Its limits

It measures the reading of isolated words, not texts, so it cannot replace the measurement of fluency in connected text or of comprehension. The task is easy to construct in Arabic, using vowelized nonsense words that follow the phonological rules of Arabic, but a locally built tool needs norms before its scores can be interpreted normatively.

WIAT-4 Wechsler Individual Achievement Test, Fourth Edition

Comprehensive achievement

The idea

Criterion B requires standardized measurement of achievement in the affected domain and its subskills. This battery measures reading, writing, mathematics, and oral language against a single set of norms, which allows the domains to be compared with one another (Breux, 2020).

What it looks like

Two stimulus books, a record form, and a response booklet in which the student writes. The examiner selects subtests according to the referral question, so not all of them need to be given. Its value for reading difficulties is that it measures the two components of the simple view of reading and their product: decoding, listening comprehension, and reading comprehension. It also includes subtests of math fact fluency and written expression.

Table 8.5: Wechsler Individual Achievement Test (WIAT-4) at a glance.

Purpose	Standardized measurement of achievement in academic domains and their subskills
Ages	4 years to 50 years 11 months

Edition and year	Fourth, 2020
Publisher	Pearson
Qualification level	An examiner trained in administering and interpreting individually administered standardized tests, in accordance with the publisher's requirements
Time	Varies with the number of subtests selected
Score types	Standard scores (mean 100, SD 15); percentile ranks, that is, the percentage of the student's peers in the norming sample who scored below him, so that a rank of 84 means he outperformed 84% of them; and composite scores for the domains
Cutoff scores	No cut-off; the Criterion B thresholds are applied
Reliability	In the technical manual
Classification accuracy	In the technical manual
Year of norm collection	In the technical manual
Arabic version	At the time of writing we know of no published standardized Arabic version

How are the results interpreted?

The standard score for each subskill is read against the Criterion B thresholds, and the subskills are then read together: low decoding with intact listening comprehension is the dyslexia pattern, whereas low scores on both call for a look at language or general ability.

Limitations

It is built on English and English-language curricula, so it should be used with Arab students only in an adapted and standardized version. A single score on a short subtest is less reliable than a composite score, so no judgment should rest on it alone.

KeyMath-3 KeyMath-3 Diagnostic Assessment

Mathematics

The idea

A single score in “mathematics” does not tell us where the student is stumbling. This test divides mathematics into areas and subskills, pinpointing the difficulty precisely enough to guide intervention (Connolly, 2007).

What it looks like

Two stimulus books from which the examiner presents the problems, and a record form. The subtests are grouped into three areas: **basic concepts**, such as numeration, algebra, geometry, measurement, and data analysis; **operations**, such as mental computation, addition and subtraction, and multiplication and division; and **applications**, such as problem solving. It has two parallel forms.

A scene from administration

The examiner presents the mental computation problems to a fourth-grade girl one by one and notices that she moves her fingers under the table on every simple addition problem. He notes this in the margin of the record form, because the score alone will not preserve the observation.

Table 8.6: KeyMath-3 Diagnostic Assessment (KeyMath-3) at a glance.

Purpose	Diagnosing areas of strength and weakness in mathematics and guiding intervention
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Ages	4 years 6 months to about 21 years
Edition and year	Third, 2007
Publisher	Pearson
Qualification level	An examiner trained in administering and interpreting individually administered standardized tests, in accordance with the publisher's requirements
Time	Approximately 30 to 90 minutes, depending on age
Score types	Scaled scores for subtests (mean 10, SD 3), and standard scores for the domains and the total score (mean 100, SD 15)
Cutoff scores	No cut-off; the Criterion B thresholds are applied
Reliability	In the technical manual
Classification accuracy	In the technical manual
Year of norm collection	In the technical manual
Arabic version	At the time of writing we know of no published standardized Arabic version

How are the results interpreted?

The examiner compares the three domains: low scores in operations and basic concepts alongside relatively intact applications fit the pattern of dyscalculia, whereas low applications alone may reflect weakness in reading or language. The test is complemented by error analysis, that is, examining the student's errors to identify the faulty procedure they are following (see Chapter 4, 4.5).

Its limits

It was built on the US mathematics curriculum and its sequence, and some of its items are tied to US currency and measurement, so it cannot simply be translated. Nor does it measure timed arithmetic fluency, so a fluency measure must accompany it.

TEMA-3 Test of Early Mathematics Ability, Third Edition

Number sense

The idea

Before mathematics difficulty shows up in written calculation, it shows up in the understanding of number and quantity. This test measures both sides of early mathematics: the **informal** knowledge a child acquires before school, such as counting, comparing quantities, and calculating with objects, and the **formal** knowledge learned at school, such as reading and writing numerals and number facts (Ginsburg & Baroody, 2003).

What it looks like

A picture book of stimuli, small objects for counting, and a record booklet. The examiner begins at an item suited to the child's age and continues until the discontinue point is reached. Typical tasks include saying which of two sets has more objects, counting a set and stating how many it contains, and reading written numerals. Two equivalent forms are available.

A scene from administration

The examiner places two cards in front of a first grader, one with four dots and the other with seven, and asks, "Which has more?" The child counts the dots on both cards one by one before answering, although his peers answer at a glance. The examiner records the correct answer and notes how he arrived at it.

Table 8.7: Profile of the Test of Early Mathematics Ability (TEMA-3).

Purpose	Measuring number sense and early mathematics, and identifying children at risk for mathematics difficulties
Ages	3 years to 8 years 11 months
Edition and year	Third, 2003
Publisher	PRO-ED
Qualification level	An examiner trained in administering and interpreting individually administered standardized tests, in accordance with the publisher's requirements
Time	About 40 minutes
Score types	A Math Ability standard score (mean 100, SD 15) and percentile ranks
Cutoff scores	No diagnostic cut-off
Reliability	In the technical manual
Classification accuracy	In the technical manual
Year of norm collection	Reported in the technical manual; its norms are relatively old
Arabic version	At the time of writing we know of no published standardized Arabic version

How are the results interpreted?

The standard score locates the child among peers, but item analysis matters more: is the child weak on informal tasks, such as comparing quantities and counting, which signals weak number sense? Or only on formal tasks, such as reading and writing numerals, which may reflect a lack of instruction?

Its limits

It is not suitable beyond 8 years 11 months, so older children need another test along with informal number-sense tasks. Its norms are dated, and dated norms can inflate a child's standing relative to today's peers. Number-sense tasks, such as comparing quantities and estimating on a number line, depend less on language than other tasks, which makes them easier to build in Arabic, but they too require local norms.

TOWL-4 Test of Written Language, Fourth Edition

Written expression

The idea

Writing is the most complex of the academic skills, because it draws on spelling, grammar, punctuation, vocabulary, and the organization of ideas all at once. This test measures it in two ways: **contrived** tasks, each targeting a single skill, and a **spontaneous writing sample** in which the student composes a complete text (Hammill & Larsen, 2009).

What it looks like

A response booklet in which the student writes, a stimulus picture for story writing, and a scoring manual. Tasks cover vocabulary, spelling, punctuation, constructing logical sentences, and combining short sentences into one. The student then writes a story about the picture after a brief planning period, and the story is scored twice: once for the accuracy of spelling, punctuation, and grammar in context, and once for story construction and organization.

Table 8.8: Profile of the Test of Written Language (TOWL-4).

Purpose	Measuring the components of written expression and pinpointing areas of weakness
Ages	9 years to 17 years 11 months

Edition and year	Fourth, 2009
Publisher	PRO-ED
Qualification level	An examiner trained in administering standardized tests and scoring writing samples, in accordance with the publisher's requirements
Time	About 60 to 90 minutes; parts can be administered to groups
Score types	Scaled scores for subtests (mean 10, SD 3), and composite scores for contrived, spontaneous, and overall writing (mean 100, SD 15)
Cutoff scores	No cut-off; the Criterion B thresholds are applied
Reliability	Reported in the technical manual; the reliability of story scoring depends on scorer training
Classification accuracy	In the technical manual
Year of norm collection	In the technical manual
Arabic version	At the time of writing we know of no published standardized Arabic version

How are the results interpreted?

Comparing the contrived tasks with spontaneous writing is informative: a student who combines sentences and punctuates correctly when asked for one skill at a time, but then neglects these skills in the story, knows the rules but does not apply them under the demands of free writing. A very short, poorly constructed story alongside intact contrived tasks, by contrast, calls for a closer look at planning and organization, or at slow handwriting itself.

Its limits

It does not directly measure handwriting or handwriting speed, so it cannot by itself distinguish a difficulty in written expression from developmental coordination disorder (8.4). Its spelling, punctuation, and syntax rules are English, so translating it makes no sense. The practical alternative in Arabic remains curriculum-based writing samples scored with an analytic rubric (see Chapter 4).

When no standardized Arabic instrument is available

In this situation, the team gathers evidence from multiple sources: curriculum-based measurement data on reading or arithmetic fluency (see Chapter 4, 4.4) compared against local norms built by the school; decoding, phonological awareness, and number-sense tasks constructed in Arabic; error analysis; and response-to-intervention data. The report states plainly that the judgment on Criterion B rested on this evidence in the absence of a standardized test, and it spells out the limits of that approach. Section 8.10 presents the Arabic instruments we found in the published literature.

8.8

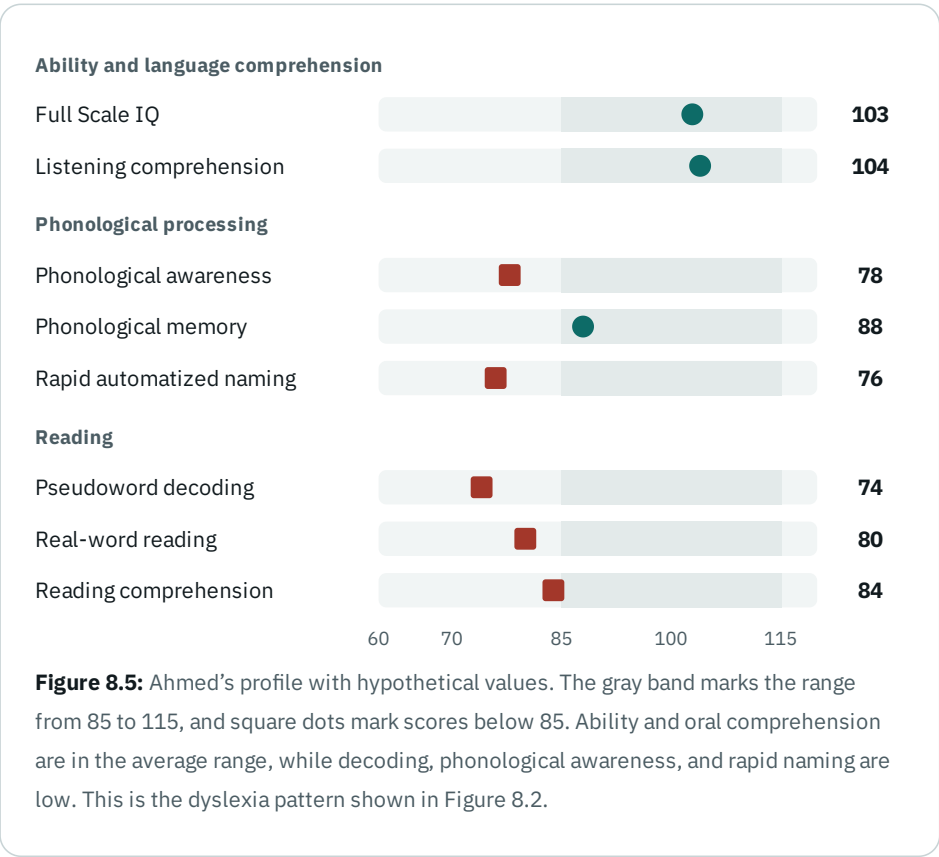
When is the judgment made? Four cases

The scores in the following cases are hypothetical and intended for teaching. They assume that the team used instruments standardized for Arabic that measure what the instruments in Section 8.7 measure. This is a teaching assumption; what is actually available is set out in Section 8.10.

Case 1: Ahmed, 8 years 6 months

Clear dyslexia

The story: Ahmed is the student from the opening scene. Universal screening at the start of second grade showed that his reading fluency fell below that of 90% of his classmates. He received small-group intervention for three months, then intensive individual intervention for another three months, yet his fluency grew at a very slow rate. This is what is called a **dual discrepancy (Dual discrepancy)**: performing below peers in both level of performance and rate of growth. Most of his oral reading errors involve omitting long vowel letters and substituting short vowels.



A ✓

Persistent for six months despite

B ✓

Decoding 74

C ✓

Since first grade

D ✓

Average intelligence, intact hearing and

intervention

vision, regular
attendance

Decision: Ahmed is diagnosed with specific learning disorder with impairment in reading, affecting word reading accuracy and fluency, at a moderate level of severity. The recommendations are systematic, intensive phonics instruction beginning with short vowels, long vowel letters, and syllables, along with accommodations that give him access to content, such as having test questions read aloud to him in non-language subjects, so that he is not denied the chance to show his understanding of science, the very understanding his teacher had noticed.

What evidence could change the decision? If his fluency growth accelerated clearly with systematic phonics instruction until he approached his peers, the severity level would need to be revisited; and if a weakness in listening comprehension emerged when measured with longer texts in Standard Arabic, a co-occurring language disorder would have to be considered.

Case 2: Lama, 9 years

She responded to instruction

The story: Lama moved among three schools in two years because of her father's work, and she was absent for long stretches in second grade owing to family circumstances. Screening showed her reading to be very low, and her mother requested a diagnostic evaluation.

Table 8.9: Evidence in Lama's case.

Source	Result	What it means
Screening at the start of the year	Her fluency fell below that of 95% of her classmates	Needs urgent support

Source	Result	What it means
Small-group intervention for 12 weeks	Her fluency grew at twice the rate of her classmates and surpassed the aimline, that is, the expected trajectory set for her progress	Strong response to instruction
Records from previous schools	Frequent absences and changes in curricula and teachers	Limited opportunity for consistent learning
Phonological awareness tasks	Average	No core phonological weakness

A X
Responded quickly

B
Improving

C
Not applicable

D X
Interrupted schooling explains the weakness

Decision: Lama is not diagnosed with a learning disability. Her weakness is explained by a lack of consistent instruction, and she responded quickly once she received it. She continues to receive support until she catches up with her classmates, with her progress monitored. If her progress later stalls despite support, her case will be reconsidered. Had support been postponed until a formal diagnosis was complete, Lama would have lost months that were enough to remedy her weakness.

The lesson

Had Lama been assessed with tests alone at the start of the year, her scores would have been very low, and she might have been misdiagnosed. It was the response-to-intervention data that revealed her real need: consistent instruction.

What evidence could change the decision? If her growth slowed or stalled after she settled in one school and attended regularly, or if more fine-grained tasks revealed a weakness in decoding or rapid naming, the lack-of-instruction explanation would weaken, and a comprehensive evaluation would need to be completed.

Case 3: Dima, 9 years 10 months

Dyscalculia

The story: Dima is in fourth grade. Her teacher reports that she participates in science and reading lessons and can explain orally how she would solve a word problem, yet she counts $7 + 5$ on her fingers, takes twice as long as her classmates on an arithmetic worksheet, and makes many errors. Her mother says she “hates math” and cries before quizzes, and that this began in first grade.

Table 8.10: Evidence in Dima’s case.

Source	Result	What it means
Universal screening in arithmetic (curriculum-based measurement, 2 minutes)	Below the 10th percentile among her classmates in third and fourth grades	A persistent, not a passing, weakness

Source	Result	What it means
Intervention in two phases: 12 weeks in a small group in third grade, then 14 weeks of intensive individual intervention in fourth grade	Her fluency grew from 8 to 13 correct digits in two minutes, against a goal of 22. Her growth rate is less than half the expected rate	Inadequate response despite more than six months of intervention (dual discrepancy)
Number-sense tasks	She counts dots one by one even in sets of three, is very slow at comparing two-digit numbers, and places 70 near the middle of a 0–100 line	Weak representation of quantity
Word problems read aloud to her	She chooses the correct operation on most of them but errs in the calculation itself	Reasoning stronger than calculation
The same facts in a calm, untimed individual session	She still counts on her fingers, and her accuracy barely improves	Anxiety co-occurs but does not explain the difficulty
Hearing and vision, attendance, and home language	Hearing and vision intact, regular attendance, and Arabic as her first language	No apparent alternative explanation

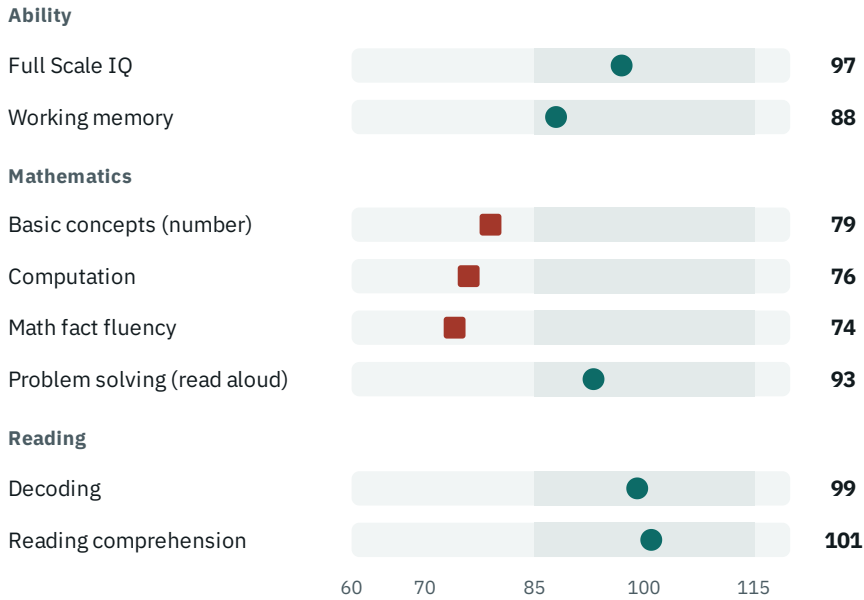


Figure 8.6: Dima's profile with hypothetical values. The gray band marks the range from 85 to 115, and square dots mark scores below 85. The weakness is confined to number, calculation, and calculation fluency, with general ability, reading, and mathematical reasoning in the average range. This is the dyscalculia pattern described in 8.4.

A ✓

Persistent for more than six months despite intervention

B ✓

Computation 76, fluency 74

C ✓

Since first grade

D ✓

Average ability, intact senses, consistent instruction; anxiety does not explain the weakness

Decision: Dima is diagnosed with specific learning disorder with impairment in mathematics, affecting number sense, memorization of number facts, and accurate and fluent calculation, with relatively intact mathematical reasoning, at a moderate level of severity. The recommendations are explicit, systematic instruction in number sense, the number line, and fact-derivation strategies, such as working out $7 + 5$ from $7 + 3 = 10$ and then adding 2, together with brief daily fluency

practice. Accommodations include fewer timed tests and permission to use a fact chart or calculator on reasoning tasks, while instruction in the facts themselves continues.

The lesson

It would have been easy to attribute Dima's weakness to anxiety, since she cries before tests. But her performance did not improve when the pressure was removed, so the anxiety here is more a result of years of failure than its cause. Addressing it nonetheless remains part of the plan.

What evidence could change the decision? If her accuracy and fluency improved clearly once her anxiety was addressed, or if observation across different settings revealed inconsistent errors linked more to attention than to number, the team would need to revisit the diagnosis and consider an alternative or co-occurring explanation.

Case 4: Yazan, 11 years

A difficulty masked by giftedness

The story: Yazan has been in the gifted program since third grade and solves mathematics problems years beyond his grade level. But his teacher in the program noticed that he refuses to write any report, spends a very long time reading texts, and always asks to explain orally instead. His school grades in Arabic are average, and this caught no one's attention because he is "not weak." His teacher referred him to the learning disabilities teacher at the start of fifth grade.

Table 8.11: Evidence in Yazan's case.

Source	Result	What it means
Intervention in fifth grade	12 weeks in a small group for reading fluency and spelling, then 12 weeks of intensive individual intervention. His fluency grew at less than half the target rate, and his spelling errors decreased only slightly	Limited response despite six months of intervention
Intelligence test	Full Scale IQ 128, Verbal Comprehension 132, Processing Speed 92, and General Ability Index (General Ability Index, GAI) 133	Very high ability. The full-scale score includes his weak processing speed and so underestimates his ability; the General Ability Index, which excludes the working memory and processing speed indexes, is the more accurate reference
Untimed reading comprehension	106	He understands in the end, but with great effort and time
Reading fluency, and decoding on a timed task	82 and 85	Below average or at its lower bound, and far below his ability
Spelling	80	More than one standard deviation below the mean

Source	Result	What it means
History	Delayed in learning to read in first grade; he compensated by memorizing words and through his strong comprehension	The difficulty appeared early but was masked

A ✓ Persistent for six months despite intervention	B ✓ Spelling 80, fluency 82: the less stringent threshold, with supporting evidence	C ✓ Since first grade	D ✓ High ability, intact senses, consistent instruction
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How did the team read the evidence? Yazan’s school grades and his untimed reading comprehension were in the average range, so he did not show up on the school’s usual indicators. But when fluency and spelling were measured with standardized instruments, both fell more than one standard deviation below the mean. This meets the less stringent threshold for Criterion B, because it is accompanied by supporting evidence: a limited response to six months of intervention, a history of early difficulty masked by compensation, and a clear impact on his functioning, as he avoids writing and needs twice the usual time.

Decision: Yazan is diagnosed with specific learning disorder with impairment in reading (fluency) and in written expression (spelling accuracy), at a mild level of severity. He is therefore a **twice-exceptional (Twice-exceptional)** student, one who combines giftedness with a disability or learning difficulty. He remains in the gifted program and receives accommodations such as extended time and writing on a computer, along with direct instruction in fluency and spelling.

The point of tension: What prompted the team to look in the first place was the gap between Yazan’s ability and his achievement, that is, the ability-comparison logic underlying the discrepancy model and the patterns of strengths and weaknesses models. The response-to-

intervention model, by contrast, compares the student with peers, so it may not see a student who compensates through ability until compensation fails. This is a well-known tension in identifying twice-exceptional learners: some researchers argue that analyzing cognitive ability profiles adds little to the accuracy of decisions (McGill et al., 2018), whereas specialists in twice-exceptionality argue that removing ability from the picture removes these students from identification. ICD-11 itself compares performance with the level of general intellectual functioning, as we saw in 8.1. The team therefore based its decision on all four criteria being met, and used the gap to explain why the difficulty was detected late. Chapter 6 presents the three models (6.2, 6.3, and 6.4), and Chapter 13 takes up the debate about twice-exceptional learners.

What evidence could change the decision? If fluency and spelling came out in the average range when remeasured with another instrument with more recent norms, or if his avoidance of writing turned out to stem from a fine motor difficulty, the diagnosis in written expression, or in both areas, would need to be revisited.

8.9 Differential diagnosis and co-occurrence

Similar conditions

Table 8.12: Differential diagnosis of learning disabilities.

Condition	Similarity	Distinguishing features
Intellectual disability	Low achievement	Difficulties across all areas, with low general ability and adaptive behavior
Lack of instruction or interrupted schooling	Very low achievement	Rapid response to consistent instruction, as in Lama's case

Condition	Similarity	Distinguishing features
Second-language learning	Weak reading and writing in the language of instruction	Skills in the home language are stronger, and progress follows the trajectory of second-language learners
Hearing or visual impairment	Difficulty with reading and spelling	The picture improves when the sensory impairment is corrected or compensated for
Attention-deficit/hyperactivity disorder (ADHD)	Errors in reading and arithmetic, and incomplete tasks	Errors are inconsistent and tied to attention rather than to a specific skill. The two disorders frequently co-occur, so both are assessed
—	Weak reading comprehension	Oral comprehension itself is weak, i.e., the poor-comprehender pattern in Figure 8.2
Developmental coordination disorder (DCD)	Poor handwriting, slow writing, and avoidance of writing	Spelling and syntax are intact when the student dictates orally or types on a keyboard, and the motor difficulty appears in nonacademic tasks such as ball games and using scissors
Anxiety and emotional problems, including math anxiety	Avoidance and lowered performance	Performance varies considerably between comfortable and stressful situations and improves when the pressure is removed

Co-occurring condition

The conditions in Table 8.12 are not always alternatives; many of them co-occur with learning disabilities in the same student. The clearest example is ADHD: published reviews report that a large proportion of individuals with one disorder also have the other, with estimates varying across samples and criteria (DuPaul et al., 2013). Likewise, dyslexia and dyscalculia co-occur more often than chance would predict, and weak reading comprehension overlaps with developmental language disorder (Fletcher et al., 2019). Knowing that two disorders may co-occur is a first step; each combination then calls for an assessment procedure that keeps one from masking or inflating the other:

- **With ADHD:** Attention ratings are gathered from at least two settings, and the examiner observes whether errors on the same skill fluctuate or remain stable. If treatment for attention begins, the academic skill is remeasured afterward; whatever weakness remains is more likely to reflect a learning disability.
- **Between reading and mathematics:** Both domains are assessed whenever a student is referred in either one, and mathematics word problems are read aloud to the student so that a reading weakness is not counted as a weakness in mathematics.
- **With developmental language disorder:** Oral comprehension and vocabulary are measured in both Standard Arabic and the student's dialect, and a speech-language pathologist is involved when oral comprehension is weak (see Chapter 11).
- **With developmental coordination disorder:** Handwritten expression is compared with dictated or keyboarded expression, and an occupational therapist is involved.
- **With anxiety:** Performance under calm, untimed conditions is compared with usual performance, and the student is asked about their experience with the subject, as in Dima's case.

8.10

In the Saudi and Arab context

 In the Saudi context: How is a student with learning disabilities identified?

The Regulations for Special Education Institutes and Programs (Ministry of Education [Al-Ma'arif], 1422 AH [Arabic]) set out the conditions for admitting a pupil to learning disabilities programs in Article 7, and the Special Education Organizational Guide retained these conditions in closely similar wording (Ministry of Education, 1436 AH [Arabic]). Table 8.13 compares this framework with the two diagnostic manuals and with US law.

Table 8.13: Learning disabilities in the diagnostic manuals, US law, and Saudi regulations.

Element	DSM-5-TR and ICD-11	US law (IDEA)	Saudi regulations
Name and definition	Specific learning disorder (DSM-5-TR) and developmental learning disorder (ICD-11): persistent difficulty learning foundational academic skills	Specific learning disability: a disorder in one or more of the basic psychological processes, manifested in listening, thinking, speaking, reading, writing, spelling, or calculating	Learning disabilities: “disorders in one or more of the basic psychological processes” that are not due to mental, hearing, visual, or other impairment, nor to learning conditions or family care (the Regulations, Article 1)

Element	DSM-5-TR and ICD-11	US law (IDEA)	Saudi regulations
Identification logic	Clearly low achievement with difficulty persisting despite intervention, with no discrepancy requirement in DSM-5-TR; performance below what is expected for age and level of general intellectual functioning in ICD-11	A severe discrepancy may not be required; response to intervention must be permitted; and alternative research-based procedures may be permitted	“A clear discrepancy between the level of his abilities and the level of his academic achievement” in one of eight areas (oral expression, listening, oral comprehension, writing, reading, reading comprehension, counting, and mathematical reasoning), “or that he has a disorder in one of the psychological processes”; together with evidence “that regular educational services are unsuitable or of little effectiveness” (Article 7). The Organizational Guide does not mention response to intervention by name

Element	DSM-5-TR and ICD-11	US law (IDEA)	Saudi regulations
Cut-off point	About 1.5 standard deviations below the mean, and as little as one standard deviation with supporting evidence (DSM-5-TR); no figure in ICD-11	No federal figure	The text sets no numerical size for the discrepancy, and we found no published regulatory text that does
Exclusion	Intellectual and sensory disabilities, other neurological and mental disorders, psychosocial adversity, lack of proficiency in the language of instruction, and inadequate instruction	Visual, hearing, and motor disabilities; intellectual disability; emotional disturbance; and environmental, cultural, or economic disadvantage	The difficulties must not result from mental impairment, a behavioral disorder, or sensory causes (Article 7)

Element	DSM-5-TR and ICD-11	US law (IDEA)	Saudi regulations
Who decides	A qualified clinician, according to each country's licensing rules	A team of qualified professionals together with the parents	The assessment and diagnosis team: the school principal, the vice principal for student affairs, the special education teacher, the general education teacher, the student counselor, specialists according to the category, and the parent where possible, after written consent (Organizational Guide)
Instruments	Standardized achievement tests and a comprehensive clinical assessment	Multi-instrument evaluation; no single procedure may be relied upon	"Instruments and measures approved by the Ministry of Education," "without relying on the results of a single measure" (Organizational Guide). We found no published list of these instruments

The table shows that the Saudi framework is closer in its wording to the logic of an ability–achievement discrepancy than to the current US guidance, and that it allows a second route: establishing a disorder in a psychological process. Yet it also requires evidence that regular services have been of little effectiveness, which in substance is close to Criterion A

and to the logic of response to intervention. Because the text specifies neither the size of the discrepancy nor how limited effectiveness is to be established, the quality of the decision depends in practice on the evidence the team gathers. Two recent qualitative studies described RTI-like practices in Saudi schools as largely informal and lacking systematic progress monitoring (Almulla & Mahama, 2026), and female learning disabilities teachers cited among the obstacles limited time, a lack of data and training, and the absence of formal adoption of the model (Altheiabi et al., 2025).

As for prevalence, a survey of 5,495 male and female students in grades 3 through 6 in Al-Zulfi Governorate estimated the prevalence of dyslexia at about 5.86%, at 6.54% among boys and 3.83% among girls (Aldakhil et al., 2023). This estimate comes from a single governorate, and at the time of writing we found no published, peer-reviewed national estimate of the prevalence of learning disabilities in general in the Kingdom.

A question for reflection: If Yazan’s case were brought before a team applying the text of Article 7 literally, which of its two conditions would the team rely on: the ability–achievement discrepancy, or evidence that regular services were of little effectiveness? And would it reach the same decision in Lama’s case?

Available Arabic instruments

Table 8.14 brings together the Arabic instruments and instrument studies relevant to this chapter that we found in the published literature at the time of writing. It makes no claim to completeness, and it is no substitute for verifying the licensing and norms of any instrument before using it in a decision.

Table 8.14: Published Arabic instruments and studies in the domains of learning disabilities.

Area	Study	Country and sample	What it offers	Limitations
Oral reading fluency	Abu-Hamour (2014a)	Jordan; 200 students in grades 1 to 3 (ages 6 to 8)	A pilot study standardizing a curriculum-based measure of reading fluency	Small sample from a single country with a different curriculum
Word recognition fluency	Abu-Hamour (2014b)	Jordan; first-grade students	Progress monitoring in early reading	A monitoring tool, not a diagnostic test
Word reading fluency	Mahfouz & Mohamed (2023)	UAE (Al Ain); 70 second-grade students	Monitoring reading progress with curriculum-based measures	Small sample; not norms
Phonological processing	Taibah & Haynes (2011)	Arabic-speaking children	Research tasks showing the contribution of phonological processing to Arabic reading	A research study, not a standardized diagnostic instrument
Dyslexia assessment in general	Elbeheri et al. (2006)	A review of assessment issues in Arabic	A framework for what Arabic assessment instruments should take into account	Not an instrument

Area	Study	Country and sample	What it offers	Limitations
Mathematics and number sense	At the time of writing, we know of no published standardized Arabic instrument			
Written expression	At the time of writing, we know of no published standardized Arabic instrument			
Comprehensive achievement batteries	At the time of writing, we know of no published standardized Arabic version of the batteries presented in 8.7			

Nor did we find published Saudi norms for curriculum-based measurement in reading or arithmetic. This is a clear research gap: decisions on Criteria A and B require norms against which to compare the student. Until such norms are published, the practical alternative is for each school to build local norms by measuring all students in a grade three times a year (see Chapter 4, 4.4).

Conclusion

The argument we have developed in this chapter centers on the idea that a learning disability is recognized first by its persistence despite intervention, and that a gap between intelligence and achievement is not, on its own, enough to establish it. The diagnostic manual requires clearly low achievement and a persistent difficulty not explained by low ability, sensory impairment, or lack of instruction. It follows that response-to-intervention data should be gathered to guard against diagnosing students who simply need instruction; that the pattern of difficulty should be specified, because each pattern has its own intervention; and that errors in Arabic reading involving short vowels, long vowels, and syllables should be read as indicators

of phonological weakness. It also follows that poor handwriting alone should not be taken as sufficient evidence, that giftedness can mask difficulty, and that anxiety may be one of its consequences.

Even so, the sources have not settled on a single position regarding discrepancy: the diagnostic manual does not require it, the international classification keeps the level of general intellectual functioning in the comparison, and the Saudi regulations call for a “clear discrepancy” without a specific figure. Also unresolved are the scarcity of standardized Arabic instruments and the absence of published Saudi norms for curriculum-based measurement, which obliges every report to state the sources of its evidence and their limits.

8.11

Summary, glossary, and activities

Chapter summary

- “Learning disabilities” is an educational term, and “specific learning disorder” is the term of the diagnostic manual; its counterpart in ICD-11 is “developmental learning disorder.”
- The category consists of persistent difficulty in a foundational academic skill despite intervention, not explained by low ability, sensory impairment, or lack of instruction.
- DSM-5-TR requires only clearly low achievement with difficulty persisting despite intervention, without requiring a discrepancy between intelligence and achievement. ICD-11 keeps the level of general intellectual functioning in the comparison, and the Saudi regulations call for a “clear discrepancy” without a specific figure.
- The simple view of reading distinguishes four patterns, each with a different intervention. Dyslexia usually stems from a phonological

weakness, which in Arabic shows up as errors with short vowels, long vowels, and syllables.

- Poor handwriting alone is not enough to diagnose a difficulty in written expression; developmental coordination disorder should also be considered. Dyscalculia combines weaknesses in number sense, number facts, and arithmetic fluency.
- Response-to-intervention data guard against diagnosing students who simply need instruction; giftedness can mask difficulty; and anxiety may be a consequence of the difficulty.
- Standardized Arabic instruments in this area are few, and there are no published Saudi norms for curriculum-based measurement, so the report must state the sources of its evidence and their limits.

Glossary of terms

Specific learning disorder	The diagnostic manual’s term for persistent difficulty in learning foundational academic skills that is not explained by other factors.
Developmental learning disorder	The counterpart of specific learning disorder in the International Classification of Diseases, Eleventh Revision.
Learning disabilities	The educational term for the category of students who qualify for special education services because of a specific learning difficulty, as defined by the education system.
Dyslexia	A pattern of learning disability marked by poor accuracy and fluency in word recognition and by

	poor spelling, usually stemming from a phonological weakness.
Dyscalculia	A pattern of learning disability marked by weaknesses in number concepts, number facts, and accurate and fluent calculation.
Number sense	An intuitive understanding of quantities and their relationships, such as comparing and estimating them and placing numbers on a number line.
Arithmetic fluency	Performing basic number facts and operations both accurately and quickly.
Developmental coordination disorder	A neurodevelopmental disorder affecting the acquisition and execution of coordinated motor skills, which may appear as poor handwriting and slow writing.
Simple view of reading	A model that treats reading comprehension as the product of decoding and language comprehension; in this chapter we refer to it as the simple view of reading.
Decoding	Converting a written word into a spoken one by linking letters to their sounds.
Phonological processing	The brain's handling of the sounds of language, including phonological awareness, phonological memory, and rapid naming.
Phonological awareness	The ability to perceive the sounds in words and to manipulate them through deletion, blending, and

	segmentation.
Rapid automatized naming	The speed of naming a series of familiar symbols; it is linked to reading fluency.
Diglossia	The coexistence of two varieties of a language in one community, such as Standard Arabic and the colloquial dialect, each with its own uses.
Pseudowords	Made-up words that follow the phonological rules of the language, used to measure pure decoding.
Dual discrepancy	A student’s performance falling below that of peers in both level of performance and rate of growth.
General Ability Index	A composite score on the Wechsler scales that measures reasoning and comprehension without working memory and processing speed.
Twice-exceptional	Students who combine giftedness with a disability or learning difficulty, so that one may mask the other.

Response to intervention, curriculum-based measurement, the discrepancy model, and patterns of strengths and weaknesses are terms defined in Chapters 4 and 6.

Review questions

1. What is the difference between “learning disabilities” and “specific learning disorder”? How might a student qualify under one but not the other? Then name one difference between DSM-5-TR and ICD-11, and one difference between DSM-5-TR and the Saudi regulations. (Objective 1)
2. Why does Criterion A require the difficulty to persist for six months despite intervention? How does this relate to Lama’s case? (Objective 2)

3. A fourth-grade girl has a standard score of 82 in spelling and has received no systematic intervention. Is Criterion B met? What is missing before a judgment can be made? (Objective 2)
4. A student reads fluently but does not understand what he reads or what he hears. Which pattern of the simple view of reading does he fit? What would you measure to confirm this? (Objective 3)
5. A first-grade teacher asks you which signs warrant monitoring a student in mathematics, and which in writing. Name three for each. (Objective 4)
6. Why is reading pseudowords a more precise measure of decoding than reading real words? (Objective 5)
7. Which of the instruments in Section 8.7 would you choose for a seven-year-old girl suspected of weak number sense? And for a twelve-year-old boy who avoids writing? What would you write in the report if no standardized Arabic version of the instrument were available? (Objective 5)
8. How might a system that compares a student only with peers miss a case like Yazan's? Why did the team use the General Ability Index rather than the Full Scale IQ? (Objectives 2 and 6)
9. A student makes inconsistent errors in arithmetic, sometimes right and sometimes wrong on the same problems. Which two diagnoses would you consider? What assessment procedure would distinguish between them? (Objective 7)
10. A student's handwriting is very poor, but his spelling and syntax are intact when he dictates his text orally. Which hypothesis would you test first? Whom would you involve in the assessment? (Objective 7)

Case for application

Muadh, 13 years, seventh grade

The story: Muadh’s teachers complain that his handwriting is “illegible,” that his written answers are very short, and that he does not finish copying what is on the board. His oral participation in class, however, is good. With his parent’s consent, the learning disabilities teacher gathered the following data over a month.

Table 8.15: Data for Muadh’s case.

Source	Result
Copying a paragraph from the textbook in five minutes	About half of what the school’s median classmate copies; letters vary in size and drift off the line
Standardized spelling test	Standard score 96
A composition written by hand, then a similar composition typed on a keyboard	The first: six poorly organized lines; the second: roughly twice as long, well organized, with few spelling errors
Reading fluency	Average
Interview with his mother	Late to ride a bicycle and tie his shoes; avoids playing soccer with peers
Physical education teacher	“He trips a lot and can’t catch the ball”
Vision and attendance	Wears glasses, with an eye examination this year; attendance is regular
Prior support	Has received no structured writing intervention

Tasks: (1) Are the criteria for specific learning disorder with impairment in written expression met? Justify your judgment against each criterion. (2) What is the most likely differential diagnosis? What evidence would you need to confirm it, and who would provide it? (3) Propose two accommodations that need not wait for the decision. (Objectives 2, 6, and 7)

Learning activities

Every activity carried out with students is conducted with the consent of the family and the school administration, without any data that could identify the student, and under the supervision of a specialist; its results are not used in any decision concerning the student.

1. **A pseudoword list:** Design twenty fully vowelized Arabic pseudowords, graded in length and difficulty, with some that distinguish short vowels from long vowels. Then try them with three students, recording and classifying their errors. *Desk alternative:* Try them with three adult colleagues and analyze which items slowed their reading, and why. (Objective 5)
2. **Applying the simple view of reading:** Choose five students and, using two equivalent texts, measure each student's listening comprehension and reading comprehension; then place them within the patterns of Figure 8.2. *Desk alternative:* Write five brief hypothetical profiles, classify them, ask a colleague to classify them independently, and compare your results. (Objective 3)
3. **A student profile:** Turn Ahmed's profile in Figure 8.5 or Dima's profile in Figure 8.6 into an intervention plan with three goals, specifying how progress toward each goal will be measured. (Objective 6)
4. **Comparing systems:** Apply the Saudi regulations column of Table 8.13 to the cases of Ahmed, Lama, Dima, and Yazan. For each case, write whether

the regulations would have reached the same decision, what evidence that decision rests on, and what the text leaves unresolved. (Objective 1)

Chapter references

- Ministry of Education. (1436 AH). *[Special education organizational guide]* [In Arabic] (1st ed., academic year 1436–1437 AH). <https://moe.gov.sa/en/aboutus/aboutministry/RPRLibrary/الدليل%20التنظيمي%20للتربية%20الخاصة.pdf>
- Ministry of Education [Al-Ma'arif]. (1422 AH). *[Regulations for Special Education Institutes and Programs]* [In Arabic]. <https://moe.gov.sa/en/aboutus/aboutministry/RPRLibrary/القواعد%20التنظيمية%20لمعاهد%20وبرامج%20التربية%20الخاصة%201422%20هـ.pdf>
- Abu-Hamour, B. (2014a). A pilot study for standardizing curriculum-based measurement oral reading fluency (CBM ORF) in Arabic. *Journal of the International Association of Special Education*, 15(1), 16–26.
- Abu-Hamour, B. (2014b). Using Arabic word identification fluency to monitor first-grade reading progress. *Dyslexia*, 20(2), 167–174. <https://doi.org/10.1002/dys.1472>
- Abu-Rabia, S. (2001). The role of vowels in reading Semitic scripts: Data from Arabic and Hebrew. *Reading and Writing*, 14, 39–59.
- Aldakhil, A. F., Ebrahim, M. T., & Gadelrab, H. F. (2023). Diagnostic survey of dyslexia and accompanying behavioral indicators in primary school students in Saudi Arabia. *Research in Developmental Disabilities*, 134, Article 104424. <https://doi.org/10.1016/j.ridd.2023.104424>
- Almulla, A. A., & Mahama, I. (2026). Elementary teachers' perspectives on RTI programmes in supporting students with learning disabilities in Saudi Arabia. *Humanities and Social Sciences Communications*, 13(1), Article 974. <https://doi.org/10.1057/s41599-026-07376-9>
- Altheiabi, A. S., Bagadood, N. H., & Sulaimani, M. F. (2025). Perceptions of learning difficulty teachers regarding the barriers to applying the response to the intervention model in Saudi Arabia. *Australian Journal of Learning Difficulties*, 30(1), 75–92. <https://doi.org/10.1080/19404158.2025.2473425>
- American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.). <https://doi.org/10.1176/appi.books.9780890425787>

- Breaux, K. C. (2020). *Wechsler Individual Achievement Test* (4th ed.): *Technical and interpretive manual*. NCS Pearson.
- Connolly, A. J. (2007). *KeyMath-3 Diagnostic Assessment*. Pearson.
- DuPaul, G. J., Gormley, M. J., & Laracy, S. D. (2013). Comorbidity of LD and ADHD: Implications for DSM-5 and assessment and treatment. *Journal of Learning Disabilities, 46*(1), 43–51.
- Elbeheri, G., Everatt, J., Reid, G., & Al Mannai, H. (2006). Dyslexia assessment in Arabic. *Journal of Research in Special Educational Needs, 6*(3), 143–152.
- Fletcher, J. M., Lyon, G. R., Fuchs, L. S., & Barnes, M. A. (2019). *Learning disabilities: From identification to intervention* (2nd ed.). Guilford.
- Ginsburg, H. P., & Baroody, A. J. (2003). *Test of Early Mathematics Ability* (3rd ed.). PRO-ED.
- Gough, P. B., & Tunmer, W. E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education, 7*(1), 6–10.
- Hammill, D. D., & Larsen, S. C. (2009). *Test of Written Language* (4th ed.). PRO-ED.
- Individuals with Disabilities Education Improvement Act of 2004 (IDEA), 20 U.S.C. § 1400 et seq. (2004).
- Jordan, N. C., Kaplan, D., Ramineni, C., & Locuniak, M. N. (2009). Early math matters: Kindergarten number competence and later mathematics outcomes. *Developmental Psychology, 45*(3), 850–867.
- Lyon, G. R., Shaywitz, S. E., & Shaywitz, B. A. (2003). A definition of dyslexia. *Annals of Dyslexia, 53*, 1–14.
- Mahfouz, M. A. S., & Mohamed, A. H. H. (2023). Using word reading fluency curriculum-based measurements to monitor students' reading progress in grade 2. *Education Sciences, 13*(2), Article 217. <https://doi.org/10.3390/educsci13020217>
- McGill, R. J., Dombrowski, S. C., & Canivez, G. L. (2018). Cognitive profile analysis in school psychology: History, issues, and continued concerns. *Journal of School Psychology, 71*, 108–121.
- Saiegh-Haddad, E. (2003). Linguistic distance and initial reading acquisition: The case of Arabic diglossia. *Applied Psycholinguistics, 24*(3), 431–451.
- Taibah, N. J., & Haynes, C. W. (2011). Contributions of phonological processing skills to reading skills in Arabic speaking children. *Reading and Writing, 24*(9), 1019–1042.

Torgesen, J. K., Wagner, R. K., & Rashotte, C. A. (2012). *Test of Word Reading Efficiency* (2nd ed.). PRO-ED.

U.S. Department of Education. (2006). Assistance to states for the education of children with disabilities and preschool grants for children with disabilities; Final rule (34 CFR Parts 300 and 301). *Federal Register*, 71(156).

Wagner, R. K., Torgesen, J. K., Rashotte, C. A., & Pearson, N. A. (2013). *Comprehensive Test of Phonological Processing* (2nd ed.). PRO-ED.

World Health Organization. (2024). *Clinical descriptions and diagnostic requirements for ICD-11 mental, behavioural or neurodevelopmental disorders*.

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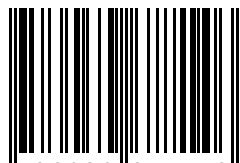
The book brings together two fields that the literature usually treats separately: disabilities and disorders, and giftedness and twice-exceptionality. It reads international standards and the American experience in light of published Saudi regulations, and describes the status of the Arabic version of each instrument it presents.

Its fifteen chapters address the foundations of measurement; formal, informal and alternative methods of gathering evidence; and identification models; then take up the categories of exceptionality one by one, supported by decision pathways, instrument profiles and applied cases. They close with fairness in diagnosis, report writing, and the development of the individualized education program.

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