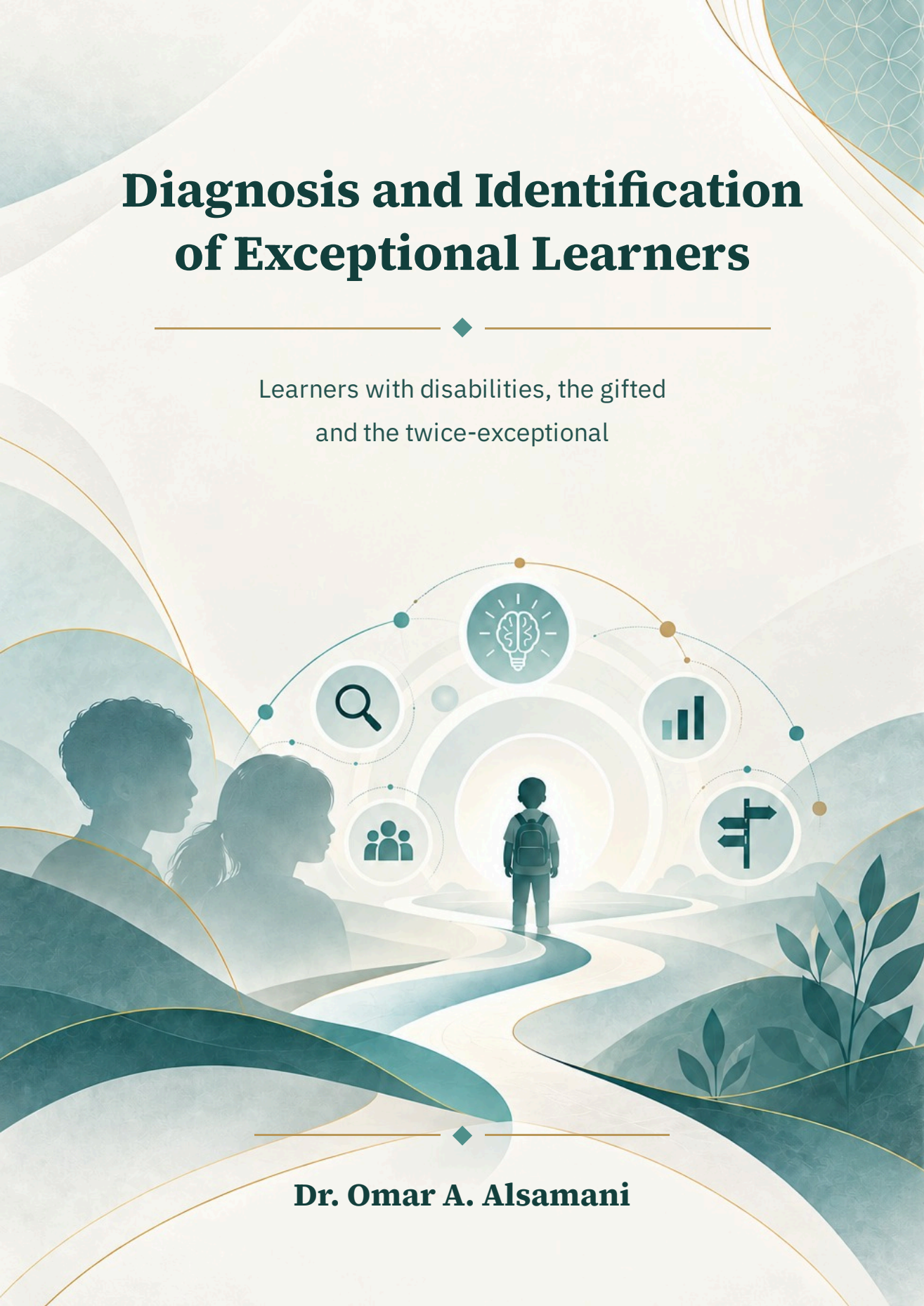


Diagnosis and Identification of Exceptional Learners

Learners with disabilities, the gifted
and the twice-exceptional



Dr. Omar A. Alsamani

Diagnosis and Identification of Exceptional Learners

Learners with disabilities, the gifted
and the twice-exceptional

Dr. Omar A. Alsamani

Diagnosis and Identification of Exceptional Learners

Learners with disabilities, the gifted and the twice-exceptional

This book is published under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International licence (CC BY-NC-ND 4.0). It may be copied, distributed and shared, in full or in part, in any medium or format, for non-commercial educational and research purposes, provided it is attributed to its author and its text is not altered. Licence text: creativecommons.org/licenses/by-nc-nd/4.0/

Website: alsamani.com

© 2026 Omar A. Alsamani

Trademarks and instrument names mentioned in this book belong to their owners and are cited for descriptive and educational purposes only. The book reproduces no items from any standardized instrument; diagrams depicting forms are schematic.

First edition, 1448 AH / 2026

Legal deposit no. 1448/7008

ISBN 978-603-06-7714-6

Chapter 11

11

Sensory and multiple disabilities and communication disorders

In these categories, much of the diagnostic work falls to equipment and medical specialists, from the audiometer and the letter chart to the device that measures pressure in the middle ear. Yet the educational question remains the team's to answer: what does this number mean for the student's learning? And how do we assess the student in a way that reaches past the disability to the ability behind it? This chapter takes up these questions and dwells on the hardest of them, which arises when several disabilities converge in a single child, nearly every standardized instrument becomes unusable, and careful functional assessment is all that remains.

Three messages to the counseling office

The second-grade teacher: "Khalid daydreams a lot, and he only follows instructions if I repeat them. He often asks the boy next to him what I said. The odd thing is that in some lessons he is fully present, and in others it's as if he's in another world. Should we refer him for an ADHD evaluation?"

The first-grade teacher: “Rahaf holds the book very close, tires quickly when reading, and confuses letters that look alike.”

The kindergarten teacher: “Abdulrahman is six, and he says ‘galam’ (گلم) instead of ‘qalam’ (قلم, pen) and ‘tamaka’ (تمكة) instead of ‘samaka’ (سمكة, fish). Does he have an articulation disorder?”

The three messages raise questions that this chapter sets out to answer. Could what looks like inattention be a hearing loss that face-to-face conversation with the child fails to reveal? How do we assess vision in a way that serves learning? And how do we tell a child’s dialect apart from a disorder in his speech? We then move on to harder questions that the messages did not raise: How do we assess the ability of a deaf student who communicates in sign language? And how can a judgment be reached about a child who cannot see, cannot speak and cannot hold a pencil?

Chapter objectives

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

- 1 Read an audiogram, determining the degree and type of loss by comparing air conduction with bone conduction, and infer which speech sounds the child is missing.
- 2 Classify results for distance visual acuity and visual field according to the international classification and the Saudi regulations, and specify what functional vision assessment and learning media assessment add to the medical report.
- 3 Identify, for each communication disorder, its distinguishing feature, the specialist who assesses it and an appropriate assessment procedure.

- 4 Apply the criteria for developmental language disorder to a child's data, and distinguish it from dialectal difference and second-language learning.
- 5 Select instruments for assessing the ability of a student who is deaf, blind or has a motor impairment, and determine in a given scenario whether an accommodation invalidates norm-based interpretation of the score.
- 6 Plan a functional assessment for a child with multiple disabilities or deafblindness for whom standardized instruments are unsuitable.
- 7 Judge whether the evidence in a new case is sufficient to warrant a judgment, and justify that judgment through the steps of the decision pathway, including ruling out sensory impairment before assigning any other category.

Introduction

In sensory disabilities and communication disorders, equipment and medical specialists carry a large share of the diagnosis. Yet the importance of these categories extends well beyond their own borders, because weak hearing, vision or language can mimic any other category. A student who follows instructions only when they are repeated, as in one of the messages at the start of the chapter, may be referred for an attention evaluation when the root of the problem lies in his hearing. The educational question remains the team's to answer: what does the medical number mean for the student's learning? And how can the student be assessed in a way that reaches past the disability to the ability behind it, especially when disabilities converge and standardized instruments are, more often than not, unusable?

We open the chapter by explaining why these categories matter for all the others (Section 11.1), then present hearing impairment (Section 11.2) and visual impairment (Section 11.3), from measurement to functional assessment. Next we address communication disorders and the assessment of need for augmentative and alternative communication (Section 11.4), developmental language disorder and how it presents in Arabic (Section 11.5), and the

difference between difference and disorder (Section 11.6), followed by multiple disabilities, deafblindness, physical and health impairments, and brain injury (Section 11.7). We then turn to warning signs and decision pathways (Section 11.8), instrument profiles (Section 11.9), four cases (Section 11.10), and differential diagnosis and co-occurrence (Section 11.11), and we close with the Saudi and Arab context (Section 11.12).

11.1

Why do these categories matter for every category?

Hearing and vision screening appears in the decision pathway of almost every category in special education. The reason is that a hearing or vision impairment can resemble any other category: it may look like inattention, as we will see in Khalid's case in this chapter, or like a learning disability, or autism, or even intellectual disability if the student is assessed with instruments that do not suit his senses. Sensory disabilities are therefore the **gateway of exclusion** in every other diagnosis: ruling out hearing and vision impairment is a step that precedes any diagnostic instrument, and we do not judge a child's ability until we are sure that he hears and sees what we present to him.

This chapter brings together three groups of categories joined by a single feature: the disability lies in the very **channels of reception and expression** on which assessment instruments depend. Hearing and visual impairments affect what reaches the child; communication disorders affect what comes out of the child; and multiple and physical disabilities affect both, as well as the ability to point, grasp and write. In all of these cases, the first question in assessment becomes: does the instrument measure what it was designed to measure in this child, or does it measure the disability?

🔗 Common misconceptions

- **“The child passed newborn hearing screening, so his hearing is fine.”** Hearing loss may emerge after birth, may be acquired, after meningitis for example, or may be a fluctuating conductive loss that comes and goes with ear infections. A screening result is a snapshot of a single day.
- **“A hearing aid restores normal hearing.”** A hearing aid amplifies sound but does not fully restore its clarity, and its benefit is weaker in noise and at a distance.
- **“Glasses solve vision problems.”** Glasses correct refractive errors; they do not repair retinal disease, cerebral visual impairment or a restricted visual field.
- **“Sign language is simplified gesture.”** Sign languages are complete natural languages with their own vocabulary and grammar, and they differ from one country to another.
- **“A child who does not speak does not understand.”** The absence of speech may be motor or sensory in origin, and many of these children understand far more than they are able to express.

11.2 Hearing impairment

The audiogram

The audiologist measures the softest sound the child can hear at different frequencies, from low-pitched to high-pitched sounds, in each ear separately, and plots the results on a chart called an **audiogram (Audiogram)**. The horizontal axis represents frequency in hertz, from low on the left to high on

the right. The vertical axis represents sound intensity in decibels, with louder sounds toward the bottom. The lower the marks fall, the louder a sound the child needs in order to hear, and thus the more severe the hearing loss.

Hearing is measured in two ways. In **air conduction (Air conduction)**, sound is delivered through headphones and travels through the outer and middle ear to the inner ear. In **bone conduction (Bone conduction)**, a small vibrator is placed behind the ear, and sound reaches the inner ear through the bones of the skull, bypassing the outer and middle ear. Comparing the two is what reveals where the problem lies: if air conduction is reduced while bone conduction is intact, the problem lies in the pathway of sound to the inner ear; if both are reduced, the problem lies in the inner ear or the nerve, as in the left ear in Figure 11.1.

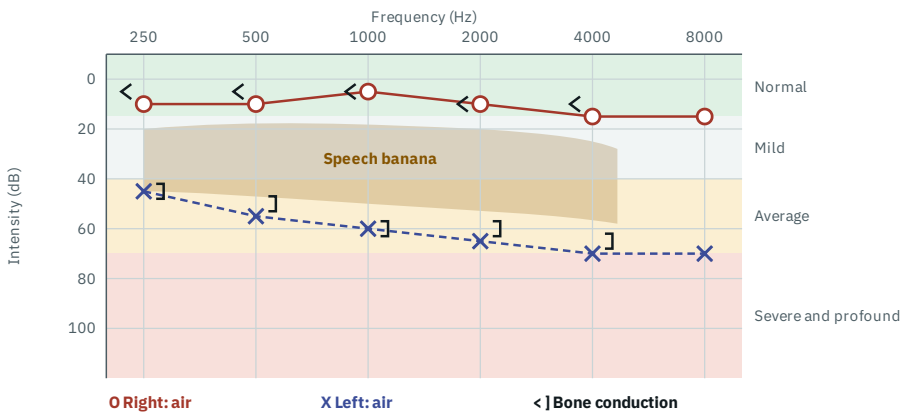


Figure 11.1: A hypothetical audiogram for Khalid. The right-ear marks (circles) fall between 5 and 15 dB, indicating normal hearing. The left-ear marks (× symbols) slope from 45 dB at the low frequencies to 70 dB at the high frequencies, averaging about 60 dB across the main speech frequencies, which indicates a moderate-to-severe loss. The left-ear bone-conduction marks (|), measured with the right ear masked by noise so that it could not respond in its place) lie close to the air-conduction marks, with no gap between them: a **unilateral sensorineural** loss. Most of the shaded area labeled “Speech banana” lies above the left-ear marks, so Khalid can barely hear speech in that ear and relies on his right ear alone. Had the bone-conduction marks been normal, with a gap between them and the air-conduction marks, the loss would have been conductive.

The shaded area labeled “Speech banana” is the range in which the sounds of ordinary speech fall. Any speech sound that lies above the child’s marks, that is, softer than them, goes unheard. This explains why some children hear “that someone is talking” without understanding the words: they hear the loud, low-pitched sounds such as vowels, but miss many of the soft, high-pitched sounds such as /s/, /f/ and /θ/.

Degrees and types of hearing loss

Degree is usually determined by the average of the thresholds at the main speech frequencies in each ear. Table 11.1 presents a classification commonly used in assessing children (Clark, 1981).

Table 11.1: Degrees of hearing loss and what a child may miss at each (Clark, 1981).

Score	Approximate range (dB)	What the child may miss without a hearing aid
Slight	16–25	Some faint and distant speech; tires in noise
Mild	26–40	Much of faint or distant speech, and high-pitched consonant sounds
Average	41–55	Most speech at normal conversational level
Moderately severe	56–70	Nearly all ordinary speech; needs a hearing aid and language intervention
Severe	71–90	Does not hear speech, even loud speech, without amplification
Profound	91 or more	May perceive some loud sounds as vibration; relies on vision or on a cochlear implant

Classifications differ across sources, and the differences are substantial. In its world report on hearing, the World Health Organization adopts another classification based on the average of four frequencies (500, 1000, 2000 and 4000

Hz) in the **better ear** (World Health Organization [WHO], 2021), shown in Table 11.2. A child whose average threshold is 40 dB thus has a “mild” loss in Clark’s classification but a “moderate” loss in the WHO classification. Every report should therefore state the classification it has adopted, and the numbers should be read alongside the descriptive labels.

Table 11.2: Degrees of hearing loss in the World Health Organization classification (WHO, 2021).

Score	Average threshold in the better ear (dB)
Normal hearing	Less than 20
Mild	20 to less than 35
Average	35 to less than 50
Moderately severe	50 to less than 65
Severe	65 to less than 80
Profound	80 to less than 95
Complete or total	95 or more
Unilateral	Less than 20 in the better ear, and 35 or more in the worse ear

The audiologist also determines the **type** of loss by comparing the two kinds of conduction:

- **Conductive (Conductive):** bone conduction is normal and air conduction is reduced, with a gap between them. It originates in the outer or middle ear. Among its most common causes in children is fluid collecting behind the eardrum with middle ear infection, and it is often temporary or **fluctuating**: it comes with a bout of infection and eases afterward, and it is treated medically.
- **Sensorineural (Sensorineural):** both air and bone conduction are reduced by roughly the same amount, as in the left ear in Figure 11.1. It originates in

the inner ear or the auditory nerve and is usually permanent.

- **Mixed (Mixed):** both are reduced, with a gap between them, so the loss combines the two types.

Presentations missing from the standard audiogram

Three presentations of hearing loss can easily escape a team that asks only whether the child can hear or not.

- **Unilateral hearing loss (Unilateral hearing loss):** the child hears well face to face in a quiet room and so passes many everyday observations. But he struggles in noise, has difficulty telling where a sound is coming from, and misses speech coming from the side of the weaker ear. Even so, the claim that “one ear is enough” is mistaken: these children are at greater risk than their peers for difficulties in language and achievement, and they need monitoring and classroom accommodations, as we will see in Khalid’s case (11.10).
- **Auditory neuropathy spectrum disorder (Auditory neuropathy spectrum disorder):** the inner ear works, so otoacoustic emissions appear normal, but the signal is not transmitted to the brain in an orderly way, and the auditory brainstem response is absent or abnormal. The distinguishing educational sign is that the child’s understanding of speech is far worse than the teacher would expect from the audiogram, and that hearing may fluctuate from day to day. Because some screening programs rely on otoacoustic emissions alone, these children may pass the screening.
- **Fluctuating hearing loss (Fluctuating hearing loss):** its best-known form is the conductive loss that accompanies recurrent middle ear infections. It is among the conditions that most closely resemble inattention, because the child is “present” one week and “absent” the next, and because a single test on a good day may come back normal.

⏏ For the specialist: The debate over central auditory processing disorder

The team is sometimes referred a child whose audiogram is normal but who is said to have **central auditory processing disorder** (**Central auditory processing disorder**): difficulty understanding speech in noise, distinguishing similar sounds or following long instructions. The American Speech-Language-Hearing Association defines it as a deficit in the central nervous system's processing of auditory information that is not attributable to higher-order language or cognitive deficits, while acknowledging that it may co-occur with other disorders (American Speech-Language-Hearing Association [ASHA], 2005). The concept, however, is widely contested. Most of its tests depend on language, attention and memory, so their results are hard to separate from weaknesses in those abilities; there is no agreed reference test; and its symptoms overlap with those of ADHD and developmental language disorder. The practical conclusion for the team is this: the explanation should be considered only after peripheral hearing has been fully assessed and language and attention have been evaluated, and it should then be treated as a description of a pattern of difficulty that merits classroom accommodations, added to whatever other diagnoses are established.

Screening and diagnosis

- **Newborn screening:** quick tests that require no response from the infant, such as measuring **otoacoustic emissions** from the inner ear (**Otoacoustic emissions, OAE**) or the **auditory brainstem response (Auditory brainstem response, ABR)**. The Joint Committee on Infant Hearing (**Joint Committee on Infant Hearing, JCIH**) recommends the 1-3-6 principle: screening by the end of the first month, diagnosis by the end of the third month and intervention by the end of the sixth month. Its most recent position statement adds a more ambitious target for systems that have already achieved this: 1-2-3, that is, diagnosis by the end of the second month and intervention by the end of the third (JCIH, 2019). A well-known study found that children whose hearing loss was identified and whose intervention began before six months of age had clearly better language than those identified later (Yoshinaga-Itano et al., 1998). Section 11.12 describes the national newborn hearing screening program in the Kingdom.
- **School screening:** the student is presented with tones at 20 dB at 1000, 2000 and 4000 Hz in each ear. If the student fails to hear any of them, the screening is repeated, and if the tone is missed again, the student is referred to an audiologist (ASHA, 1997).
- **Diagnosis:** this is the audiologist's task, using pure-tone audiometry by air and bone conduction, speech audiometry for detection and discrimination, middle ear pressure measurement (**Tympanometry**) and other procedures. The first profile in Section 11.9 presents these procedures.

What educational assessment adds

An audiogram yields a number, but it does not tell us how the child hears in a classroom with thirty students and an air conditioner. The educational team therefore completes the picture by assessing **functional hearing (Functional hearing)**, that is, how the child actually uses his hearing in class; by assessing language in the mode through which the child communicates, whether spoken

Arabic or sign language; and by determining the most suitable mode of instruction. The child's cognitive ability is measured with nonverbal instruments, or instructions are given in the communication mode he has mastered, rather than through verbal tests delivered in a language he cannot hear well (see the box in 11.9).

The perspective of the Deaf community and sign language

Many deaf people see themselves as members of a linguistic and cultural community with its own language, not as individuals who lack hearing. Whether or not the team adopts this perspective, it has three consequences for assessment. First, **Saudi Sign Language** is a complete language, so a child who is fluent in it has an intact first language, and his language development should be judged in that language before his spoken or written Arabic. Second, assessment should be conducted in the child's stronger language, by an examiner fluent in it or with the help of a qualified interpreter, with an explicit statement in the report that interpretation alters the standardized conditions of administration. Third, the greatest danger to a deaf child is **language deprivation**, which is more harmful than deafness itself: reaching school age without a fluent language, whether spoken or signed, because no one gave the child access to a language he could perceive in full. Such a child may look on tests as if he has an intellectual disability, when what he actually has is deprivation of language.

At the time of writing, we know of no published standardized instrument for assessing Saudi Sign Language. Its assessment therefore relies on nonstandardized sources: a sample of the child's narrative in sign language, evaluated by a teacher or a deaf adult fluent in it; comparison with what is known about language development in general; and questions to the family about the language in which the child was raised and when his exposure to it began.

11.3

Visual impairment

Visual acuity

Visual acuity (Visual acuity) is the sharpness of vision. It is measured with a chart of letters or symbols of decreasing size and expressed as a fraction. A value of 6/6 means that the person sees at six meters what a person with normal vision sees at six meters. A value of 6/60 means that the person must come as close as six meters to see what a person with normal vision sees from sixty meters. In systems that use feet instead of meters, 6/6 is written as 20/20. With young children and those who do not know letters, charts with simple symbols are used, such as LEA symbols, a circle, a square, an apple and a house, or four-letter charts (**HOTV**) on which the child points to the matching letter on a card in front of him without having to name it.

This is **distance acuity**. **Near acuity (Near acuity)** is measured at reading distance and is not always equal to distance acuity: some children see the board but tire when reading a book, and others the reverse. Nor does acuity reveal **contrast sensitivity (Contrast sensitivity)**, the ability to distinguish an object from its background when their colors are similar, such as gray print on white paper or a stair step the same color as the floor. A student's acuity may be acceptable on a black-on-white chart, yet he stumbles over a faded photocopied worksheet.

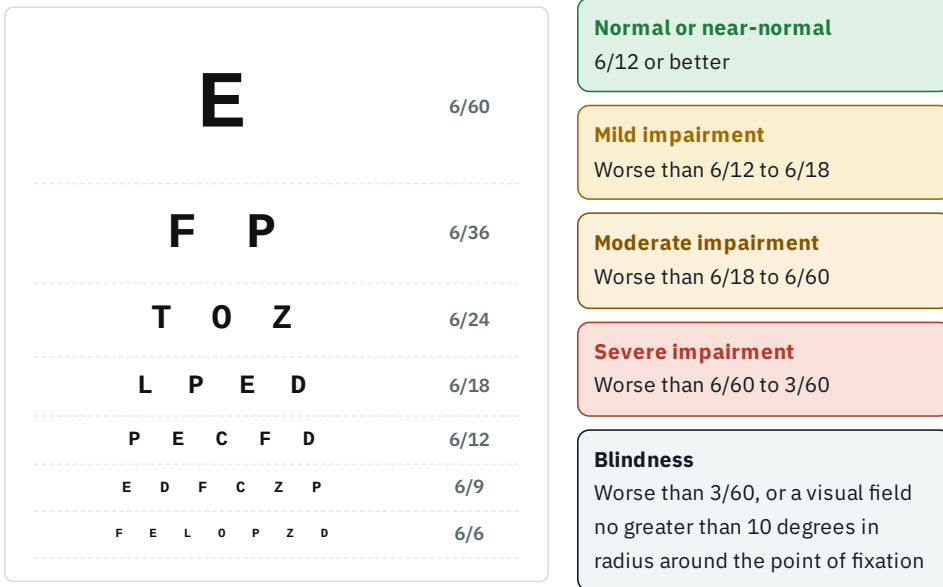
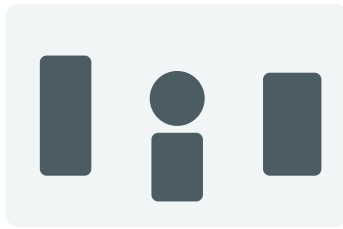


Figure 11.2: An illustration of a visual acuity chart, with the categories of distance vision impairment in the International Classification of Diseases, Eleventh Revision (ICD-11) (World Health Organization, 2019). Acuity is measured in the better eye with correction. A person whose visual field in the better eye is restricted to 10 degrees or less is also classified as blind, whatever their acuity. This differs from the Saudi regulations, under which a student is considered educationally blind if acuity is below 6/60 or the visual field is narrower than 20 degrees (see 11.12).

Visual field

The **visual field (Visual field)** is the area a person can see without moving the eyes. Visual acuity may be good at the center of vision while the field is restricted, so the student sees what is directly in front of him clearly, as if looking through a tube, but misses what lies to either side. Such a student may read the small letters on the chart yet bump into classmates in the hallway and fail to see the whole board.

**Normal field**

Sees the whole scene, out to both sides

**Restricted field**

Sees only the center and misses what lies to either side

Figure 11.3: One scene viewed with two visual fields. Acuity alone does not reveal a restricted field, which is why each is measured.

Functional vision assessment, learning media assessment, and orientation and mobility

The ophthalmologist or optometrist provides acuity, field and the medical diagnosis. The educational assessments are carried out by the teacher of students with visual impairments and other specialists:

- **Functional vision assessment (Functional vision assessment):** shows how the student actually uses vision in the classroom, the hallways and the playground: what print size the student reads comfortably, from what distance the board is visible, what lighting and contrast suit the student, and how long the student can sustain visual work before tiring.
- **Learning media assessment (Learning media assessment):** determines the most suitable medium for the student to learn reading and writing: regular print with magnification devices, large print, braille, a combination of media, or auditory media. The decision rests on observing how the student explores the environment, primarily through vision or through touch, and on the student's efficiency and speed in reading with each medium (Koenig & Holbrook, 1995).

- **Orientation and mobility assessment (Orientation and mobility):** conducted by an orientation and mobility specialist, it shows how the student determines where he is and moves about safely and independently: in hallways and on stairs, in dim lighting and when crossing the street, and whether he needs training with the white cane.

Assessment of a student with a visual impairment extends beyond the general curriculum. Specialists in educating this population have formulated what is known as the **expanded core curriculum (Expanded core curriculum)**: skills that sighted children usually learn through incidental observation but that a blind or low-vision student needs to be taught explicitly. It comprises nine areas: compensatory and access skills such as braille, orientation and mobility, social interaction, independent living, recreation and leisure, career education, assistive technology, sensory efficiency, and self-determination. Each area requires an assessment of the student's present level, because a plan that overlooks them teaches the student the curriculum while leaving him unable to access it.

Cerebral visual impairment

Some children have healthy eyes, but the brain does not process what the eye sees in a typical way. This is called **cerebral or cortical visual impairment (Cerebral/Cortical visual impairment, CVI)**, and it is one of the common causes of visual impairment among children with multiple disabilities. It appears in characteristic patterns, such as a preference for a particular color, difficulty seeing objects in a visually cluttered environment and delayed visual response. Detecting it requires a specialized functional assessment that complements the conventional eye examination (Roman-Lantzy, 2018). We will meet it in Salman's case (11.7).

11.4

Communication disorders

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (**DSM-5-TR**), classifies communication disorders into several types (American Psychiatric Association [APA], 2022). Under its implementing regulations, the U.S. Individuals with Disabilities Education Act (**IDEA**) adds **voice disorders** to the category of “speech or language impairment”; these do not appear in the diagnostic manual because they are not neurodevelopmental disorders (U.S. Department of Education, 2006, 34 CFR §300.8(c)(11)). All of these disorders are assessed by the speech-language pathologist:

Table 11.3: Types of communication disorders and their distinguishing features.

Disorder	Distinctive features	Example
Language disorder	Persistent difficulty in acquiring and using language, in vocabulary, sentence structure or connected discourse, in comprehension or expression (see 11.5)	A six-year-old who speaks in two-word sentences and does not understand questions beginning with “why”
Speech sound disorder	Persistent difficulty producing speech sounds that is inappropriate for the child’s age and interferes with the intelligibility of speech	A five-year-old who substitutes so many sounds that only his family can understand him
Childhood-onset fluency disorder	Repetitions or prolongations of sounds and syllables, or blocks before words, that interfere with communication; commonly known as stuttering	“B-b-b-baba,” or a long silent block before a word

Disorder	Distinctive features	Example
Social (pragmatic) communication disorder (Social [pragmatic] communication disorder)	Difficulty using language in social situations, without restricted and repetitive patterns of behavior, which is what distinguishes it from autism spectrum disorder	Does not know when to start or end a conversation and does not grasp hints
Voice disorders	Deviation in voice quality, pitch, loudness or resonance from what suits the child's age and sex, such as persistent hoarseness or the excessive nasality that accompanies cleft palate	A student whose voice has been hoarse for months and gives out by the end of the school day

In assessment, the speech-language pathologist uses standardized language tests such as the Clinical Evaluation of Language Fundamentals, Fifth Edition (**CELF-5**) (Wiig et al., 2013), presented in the third profile in 11.9. The pathologist also uses picture-based articulation tests in which the child names pictures covering the sounds of the language in their various positions in the word: initial, medial and final. A **language sample (Language sample analysis)** drawn from the child's natural speech is analyzed, yielding measures such as mean length of utterance. For stuttering, the percentage of stuttered syllables in a speech sample is calculated, and a standardized instrument may be used to rate severity, such as the Stuttering Severity Instrument, Fourth Edition (**SSI-4**) (Riley, 2009). For voice disorders, voice therapy begins only after an ear, nose and throat physician has examined the larynx, because persistent hoarseness may have an organic cause that requires medical treatment.

□ Comparison with ICD-11

The International Classification of Diseases, Eleventh Revision (**ICD-11**), was adopted in 2019 and came into effect on 1 January 2022. It places speech and language disorders among the neurodevelopmental disorders under the heading “developmental speech or language disorders,” distinguishing **developmental speech sound disorder**, **developmental speech fluency disorder** and **developmental language disorder** (**Developmental language disorder**). The most important difference from the American manual is that pragmatic impairment in ICD-11 is a subtype of developmental language disorder, “with impairment of mainly pragmatic language,” alongside other subtypes, including one that affects both receptive and expressive language and one that affects mainly expressive language. The classification states explicitly that the language in question may be spoken or signed (World Health Organization, 2024). Hearing and visual impairments, by contrast, are classified in ICD-11 as health conditions in other chapters, outside the neurodevelopmental disorders.

△ Arabic is not a translation of English

Arabic differs from English in its sounds, the order in which they are acquired and its grammatical structures. An articulation or language test translated from English does not measure Arabic sounds that do not exist in English, nor does it reflect their order of acquisition. Researchers have studied the order of acquisition of Arabic consonants among Jordanian children, first at preschool age and then at older ages (Amayreh & Dyson, 1998; Amayreh, 2003). Such studies, along with instruments built on Arabic, should inform judgments about a child’s articulation, bearing in mind that the child’s dialect may differ from that of the study sample.

Assessing the need for augmentative and alternative communication

For some children, speech is not enough to communicate, either because they do not speak or because their speech is unintelligible to anyone outside the family: the child with cerebral palsy affecting the speech muscles, the nonspeaking autistic child, the child with multiple disabilities. For these children, **augmentative and alternative communication (Augmentative and alternative communication, AAC)** is assessed; it includes signs, pictures, symbol boards and speech-generating devices. This assessment does not require the child first to prove “readiness” by reaching a particular cognitive or linguistic level; every child whose speech does not meet his communicative needs is a candidate. The assessment answers practical questions: How can the child make a selection, by touch, by eye gaze, or with a switch pressed with the head? What can the child see, and what size of symbol can he discriminate? Does he understand that a picture stands for an object? With whom does he communicate, and what does he want to talk about? One or more systems are then tried in real situations and judged by what the child achieves with them. The evidence indicates that alternative communication often supports the development of speech, contrary to the common fear that it hinders it.

11.5 Developmental language disorder

Children whose language was delayed for no apparent reason used to be described in many ways: “language delay,” “developmental aphasia” and “specific language impairment” (**Specific language impairment**). The last of these usually required the child’s language to be clearly below his nonverbal intelligence. An international panel of specialists then came together in a consensus study known as **CATALISE** and settled on a unified term: **developmental language disorder (Developmental language disorder, DLD)** (Bishop et al., 2017). The international classification (ICD-11) has adopted the same term.

What has changed?

- **Language disorder or developmental language disorder?** “Language disorder” is used for any child with a language difficulty that is likely to persist beyond early childhood and that affects communication or learning. If the difficulty is associated with a known condition, such as sensorineural hearing loss, autism, intellectual disability or a genetic syndrome, the term is “language disorder associated with....” The term “developmental language disorder” is reserved for children whose difficulty is not associated with any of these conditions (Bishop et al., 2017).
- **A discrepancy with nonverbal intelligence is not required.** A child whose nonverbal intelligence is in the low average range, above the level of intellectual disability, can be diagnosed with developmental language disorder. A British population study found that about 7% of children at school entry have the disorder, and that children with low nonverbal intelligence did not differ from others in the severity or impact of their language difficulties (Norbury et al., 2016). Requiring a discrepancy had denied children services without justification.
- **Co-occurrence does not rule out the diagnosis.** The presence of ADHD, dyslexia or developmental coordination disorder does not preclude a diagnosis of developmental language disorder.

How does it present in Arabic?

Describing this disorder in Arabic requires more than translating what is known about it in English. Arabic is a derivational language rich in morphology, and difficulty in it surfaces in places specific to the language. Table 11.4 presents areas that the speech-language pathologist would do well to examine in the child’s language sample and in structured tasks, judging them against the standard of the child’s own dialect.

Table 11.4: Areas to examine in a child's Arabic when developmental language disorder is suspected.

Area	What is observed	Example prepared by the author
Morphological patterns	Difficulty deriving words from their roots according to their patterns, and reliance on a single form that the child repeats	Says “الرجل الذي يكتب” (“the man who writes”) and does not use “الكاتب” (“the writer”) at an age when his peers use it
Plural forms	Overgeneralizing the sound masculine or feminine plural to words that take a broken plural in his dialect, and continuing to do so after peers have moved past it	“كتبات” instead of “كتب” (“books”), and “ولدين” (“two boys,” dual) for more than two
Attached pronouns	Omitting or confusing them, or using the noun in place of the pronoun	“أعطى أحمد الكرة أحمد” (“Ahmad gave the ball to Ahmad”) instead of “أعطاه الكرة” (“he gave him the ball”)
Agreement	Failure of the verb or adjective to agree with its subject or the noun it modifies in gender and number	“البنيت راح” (“the girl went,” with a masculine verb), “الأولاد يلعب” (“the boys plays”)
Connected discourse	Short, disjointed stories, few connectives, and difficulty retelling a story heard in its correct sequence	Retells a five-event story in two unconnected sentences
Comprehension	Difficulty understanding long sentences, passive constructions and complex questions, sometimes masked by reliance on context	Carries out the first of two instructions and leaves the second

The dilemma of diglossia

The Arab child speaks a dialect at home and encounters Modern Standard Arabic at school and in books, and the examiner's or the test's dialect may differ from the child's own. When the child is measured in Standard Arabic or in another dialect, his performance appears lower than it actually is; this is **diglossia (Diglossia)**. Matters become more complicated still with a child raised in a language other than Arabic. Assessment therefore rests on three principles: language is measured first in the child's own dialect; if the child is bilingual, his other language is examined as well, because a true disorder appears in both languages; and tasks less influenced by prior language experience are used, such as dynamic assessment (see 11.6 and Chapter 5) and nonword repetition.

Its role in differential diagnosis

Developmental language disorder lies at the heart of differential diagnosis for several categories. **With intellectual disability**, the deficit is general, encompassing nonverbal ability and adaptive behavior, whereas in developmental language disorder nonverbal ability and adaptive behavior outside the language domain are clearly stronger. **With weak reading comprehension**, many students who read fluently but do not understand have a weakness in oral language itself, so listening comprehension is measured before a reading difficulty is concluded. **With autism spectrum disorder**, the two may resemble each other in weak language and social difficulties, but the social difficulties in developmental language disorder stem from the language weakness, are not accompanied by restricted and repetitive patterns of behavior, and leave nonverbal communication and the desire to interact intact. **With hearing loss**, the loss is ruled out first, including fluctuating loss that a single test may miss.

11.6

Difference versus disorder

Among the most important things a teacher should know is that a child who speaks in his own dialect does not have a disorder. Children learn to talk from their families and pronounce words as the people around them do. A child who says “گلم” (galam, “pen”) in a community where everyone pronounces the qaf as a g is speaking entirely correctly by the standard of his dialect. A disorder, by contrast, is measured as a departure from the pattern of the child’s own dialect. Among the patterns that warrant evaluation is the replacement of **fricatives (Fricatives)**, sounds produced with a continuous stream of turbulent air, such as s, sh and z, with **stops (Stops)**, sounds in which the airflow is blocked and then released in a single burst, such as t and d. This substitution is called **stopping (Stopping)**.

Dialectal difference: not a disorder

گلم → قلم (qalam → galam, “pen”)

Pronouncing the qaf as a g is a feature of many dialects across the Arabian Peninsula. The child learns Modern Standard Arabic at school, and his pronunciation is not treated.

A pattern that warrants evaluation

سمكة → تمكة (samaka → tamaka, “fish”)

Replacing a fricative such as s with a stop such as t is a pattern that fades with development. Because the child’s dialect does not pronounce s as t, its persistence across an entire class of sounds, together with poor speech intelligibility, warrants evaluation.

Figure 11.4: A child’s pronunciation is judged by the standard of his dialect and community.

The same rule applies to a student learning Arabic as a second language. His errors in sentence structure may simply be a natural stage in learning a new language. To tell the two apart, we ask about his first language: does he speak it with fluency appropriate for his age? A genuine language disorder appears in both languages, whereas difficulty learning a second language appears in

the new language alone. Here **dynamic assessment**, presented in Chapter 5, is useful: the child is taught a new language skill during the assessment session itself, and the examiner observes how quickly he learns it. A child who learns quickly once taught is most likely showing limited experience with the language, whereas one who learns very slowly despite instruction warrants a more in-depth evaluation.

11.7

Multiple disabilities, deafblindness, physical and health impairments, and brain injury

In these categories, standardized instruments recede to the margins, because most of them assume a child who can see, hear, point, hold a pencil and sit still for a full hour. Functional assessment, repeated observation in natural settings and curriculum-based measurement become the primary sources of evidence. Table 11.5 presents the definitions of these categories in U.S. law and the focus of assessment in each. Saudi regulations specify corresponding categories, which are presented in Section 11.12.

Table 11.5: Categories of multiple, physical and health impairments and brain injury in U.S. law, and the focus of assessment in each.

Category	Definition in U.S. law (abridged)	Focus of assessment
Deafblindness (Deaf-blindness)	Concomitant hearing and visual impairments, the combination of which causes such severe communication and other developmental and educational needs that they cannot be accommodated in programs designed solely for deaf children or solely for blind children	Communication: how the child receives and expresses information, and a joint functional assessment of his remaining hearing and vision

Category	Definition in U.S. law (abridged)	Focus of assessment
Multiple disabilities	Concomitant impairments, such as intellectual disability with blindness or with an orthopedic impairment, the combination of which causes such severe educational needs that they cannot be accommodated in a program designed for one of the impairments alone. Does not include deafblindness	Functional skills in daily routines, communication, and the means of access to learning
Orthopedic impairment	A severe orthopedic impairment that adversely affects educational performance, including impairments caused by a congenital anomaly, by disease, or by other causes such as cerebral palsy and amputation	Access: seating, writing and mobility, and adapting assessment instruments so that motor impairment is not measured in place of the intended ability
Other health impairment	Limited strength, vitality or alertness due to chronic or acute health problems, such as asthma, diabetes, epilepsy, heart conditions, sickle cell anemia, and attention-deficit/hyperactivity disorder, that adversely affects educational performance	The effect of the condition and its treatment on attention, energy and attendance, and distinguishing between instruction the student has missed and what he is unable to do
Traumatic brain injury	An acquired injury to the brain caused by an external physical force, resulting in functional or psychosocial impairment that adversely affects educational performance. Does not include congenital or degenerative injuries or those induced by birth trauma	Comparison with the student's level before the injury, and tracking rapid change in the first months

Source: IDEA (2004) and its implementing regulations (U.S. Department of Education, 2006, 34 CFR §300.8(c)).

Assessing the child with deafblindness

A child with deafblindness is seldom both totally deaf and totally blind; most of these children have residual hearing, residual vision, or both. Assessment therefore begins with a **joint functional assessment of hearing and vision**: what the child sees, at what distance and in what lighting; what he hears and under what conditions; and how he uses the two senses together. This assessment is carried out over several days in familiar settings, because the child's responses are affected by fatigue, medication and location.

Next comes the **communication assessment**, the centerpiece of the entire evaluation. Many of these children are at the **pre-symbolic communication** stage: they communicate through body movements, changes in facial expression, crying, and taking an adult's hand and guiding it, before words, signs or pictures have developed. The assessment asks: does the child act intentionally to influence others? Does he use real objects as symbols, such as holding a spoon to ask for food? Does he understand **tactile communication** (**Tactile communication**), such as signs made with his hand resting on the signer's hand so that he can feel them, or consistent touch cues on his body that announce what is about to happen? Among the descriptive tools used here is the **Communication Matrix**, which describes seven levels of communication, from unintentional behavior to language, without yielding a standard score. Family members and others who know the child well take part in this assessment, because they are best able to read his subtle signals.

Orthopedic impairment: when does an accommodation invalidate the norms?

A child with cerebral palsy may understand the question and know the answer, yet be unable to point to it quickly, arrange the pieces or draw the figure. If a standardized test is administered to him as it stands, it measures his hands, not his mind. The response mode is therefore adapted: pointing with eye gaze instead of a finger, selecting an option with a switch, or saying the answer for the examiner to record, along with comfortable, supportive seating that stabilizes the body.

For the specialist: accommodations that preserve the norms and accommodations that invalidate them

Norms assume that the student was given the same task under the same conditions as the norming sample. The decisive question, then, is whether the accommodation changes **what the test measures** or only **how the student accesses it**. If the test measures reasoning, changing the way the student indicates an answer usually leaves the construct intact, and the score can be interpreted against the norms, with a note in the report. But if timing is removed from a test of speed, if drawing is replaced with selecting an option on a test of visual-motor integration, or if the items of a reading test are read aloud to the student, the construct itself has changed and the standard score becomes meaningless. In that case the result is written as a description of what the student did under the accommodated conditions and is not converted into a standard score or a percentile rank. (The percentile rank is the percentage of the student's peers in the norming sample who scored below him, so a rank of 84 means that he outperformed 84% of them; it is precisely this comparison that has lost its basis here.) The same holds for converting a test into braille or large print: an enlarged item may become easier or harder, and braille reading is slower than print reading, so item timing and difficulty change. Every accommodation is named in the report, along with the examiner's judgment of its effect on the norms.

Health impairments: attention and attendance

Students with chronic illnesses are often referred for “poor attention” or “low achievement.” The first question here is whether what we are seeing is an effect of the illness or its treatment, or a separate difficulty. **Absence seizures** appear as repeated lapses lasting a few seconds that a teacher may mistake for

daydreaming, and some antiepileptic medications can affect alertness and memory. Low blood sugar in a student with diabetes weakens concentration at particular times of day. Frequent absences for treatment or hospitalization, as may occur with sickle cell anemia, leave gaps in instruction, not in ability. Assessment therefore takes three things into account: it is scheduled at a time when the student is in his best health; the physician is asked about the expected effect of medication; and the student's achievement is compared with the instruction he has actually received, alongside comparison with his class, with measurement repeated once his condition stabilizes.

Acquired brain injury and distinguishing it from intellectual disability

A student who was learning like his peers and then, after a car accident or a fall, saw his performance decline differs from a student with intellectual disability, even if their scores are similar. The difference is established through three lines of evidence. **The first is history:** the injured student has a record of performance before the injury, in grades, reports and work samples, that serves as a baseline for comparison. **The second is the pattern of abilities:** injury usually leaves an uneven profile, such as slow processing and weak new learning and attention, while knowledge acquired before the injury remains intact, whereas the deficit in intellectual disability is more general. **The third is the trajectory of change:** the injured student's performance may improve rapidly in the first months, so assessment is repeated at intervals before any lasting judgment is made. The criterion of onset during the developmental period is not decisive on its own, because a child injured in childhood is injured during the developmental period; for this reason the diagnostic manual permits a diagnosis of intellectual disability in such cases if its criteria are met, together with a diagnosis of a neurocognitive disorder (APA, 2022). The educational difference here is that this student's needs change quickly, so his plan is reviewed more often than those of other students.

A case of multiple disabilities: Salman, age 8

A judgment without a standard score

The story: Salman has spastic quadriplegic cerebral palsy affecting his arms, his legs and the muscles of speech; he does not speak and uses a wheelchair. He also has epilepsy controlled by medication, and his mother says that he “sometimes sees and sometimes doesn’t.” He was referred to the assessment and diagnosis team to determine his category and services before he started school. A psychologist at a center he had attended earlier had tried to administer a nonverbal intelligence test, stopped after a few minutes and wrote: “Did not respond to the items; score cannot be computed.”

The team decided not to try again with another test, and instead to gather evidence over four weeks in settings familiar to Salman, at home and at the center, with his mother taking part.

Table 11.6: Evidence in Salman’s case.

Source	Result
Hearing (auditory brainstem response)	Normal in both ears; this measure requires no response from Salman
Eye examination	Both eyes are structurally intact, and the examination does not explain his weak visual responses
—	He looks at shiny red objects more than at others, responds a few seconds after they are presented, loses them when they are placed against a cluttered background, and sees best what is presented on his left side. The pattern is consistent with cerebral visual impairment

Source	Result
Physical therapist and occupational therapist	He can turn his head to the right voluntarily, and after brief training he presses a large switch mounted on his wheelchair with his cheek
Communication assessment	He smiles and moves his legs when he hears his brother's voice, cries when an activity he enjoys stops, and calms down when it resumes. By the third week he had begun pressing the switch to restart a song the specialist had paused; that is, he acts intentionally to influence others. He has not yet shown that he understands pictures as symbols
Interview with his mother and observation of routines	He depends on others for eating, dressing and getting around. He knows his daily routine: he calms down when placed in his car seat and anticipates his bath when he hears running water
Neurologist	Seizures have been controlled for a year; the current dose is not expected to affect his alertness much, and morning assessment is preferable

How the team read the evidence: No standardized intelligence instrument is suitable for Salman. Verbal instruments require speech, and nonverbal ones require vision and hand movement, and he has neither to the degree they assume. Any score computed for him would measure his motor and visual impairments rather than his ability. The team therefore made no judgment about the level of intellectual disability. The international classification provides, for a case like this, the category “disorder of intellectual development, provisional” (**Disorder of intellectual development, provisional**), used when there is evidence of intellectual impairment but valid assessment is not possible because of a sensory or motor impairment (World Health Organization, 2024).

Decision: Salman is found eligible for special education services under the category of multiple disabilities, and the report documents the established impairments with their evidence: orthopedic impairment, cerebral visual impairment, and communication at the pre-symbolic stage. The report states that the estimate of his intellectual ability is deferred and that no IQ score computed for him should be relied upon. Augmentative communication begins with a single switch and consistent touch cues for activities, and materials are visually adapted to his pattern: a single bright color, a simple background, and presentation on his left side. His communication is to be reassessed in six months.

The lesson of the case: The absence of a standard score does not mean the absence of evidence. The judgment here rested on repeated, documented observations from multiple sources in natural settings, each answering an educational question: how does Salman reach the world, and how does he act on it? Had the team settled for the phrase “did not respond to the items,” Salman would have been left without a plan.

What evidence could change the decision? If, at reassessment in six months, Salman showed a consistent, intentional choice between two pictures or two symbols using the switch, it would become possible to move to tasks measuring symbolic understanding with a response mode suited to him. If his antiepileptic medication changed or his seizures returned, his visual and communicative responses would need to be reinterpreted in that light.

11.8

Warning signs and decision pathways

Warning signs

Teachers and families are the first to notice. Table 11.7 brings together signs that call for referral to a specialist; their value lies in raising the alert. Any one of them warrants a hearing or vision examination, regardless of the result of earlier screening.

Table 11.7: Warning signs in hearing, vision and communication.

Area	Signs at home or in class	Refer to
Hearing	Often asks for things to be repeated; watches classmates to know what to do; understands better when he can see the speaker's face; turns up the television; mispronounces and misspells high-pitched sounds; has recurrent ear infections; or performs inconsistently from one week to the next	An audiologist, and an ear, nose and throat specialist when an infection is suspected
Vision	Holds the book close to his face; tilts his head; closes one eye; rubs his eyes; bumps into objects or stumbles on stairs; tires quickly when reading; copies from the board with many errors; or one eye appears to turn	An ophthalmologist, then a teacher of students with visual impairments for a functional assessment
Language	Does not combine two words into a phrase by age two; at school age speaks in shorter, simpler sentences than his peers; does not understand complex instructions; or cannot recount what happened to him in order	A speech-language pathologist, after a hearing examination

Area	Signs at home or in class	Refer to
Speech, fluency and voice	Speech is unintelligible to people outside the family after age four; stutters with facial tension or avoids speaking; or hoarseness persists for weeks	A speech-language pathologist, and an ear, nose and throat specialist for hoarseness
At any age	Loss of words or skills the child had already acquired	Urgent referral to a physician

 For the teacher: three observations in class

- **Change the channel and note the difference:** Give the student a spoken instruction while you stand behind him, then a similar instruction while he can see your face, then a written instruction. If he carries out the instruction clearly better when he sees your face or reads it, hearing should be checked before attention.
- **Record when and where:** If you find yourself saying “sometimes he hears and sometimes he doesn’t,” write down the days, where the speaker was in relation to the student, and the noise level. Fluctuation linked to colds, and a difference between one side of the student and the other, are two patterns an audiologist knows well.
- **Enlarge the print once:** Make an enlarged copy of a page from the student’s textbook, and compare his errors and fatigue on the two pages. If his errors on similar-looking letters disappear, the root of the problem lies in vision, and his reading itself is most likely sound.

The value of these observations is that they turn a general complaint into information the specialist can use; the diagnosis itself remains the specialist’s responsibility.

Decision pathways

Figures 11.5, 11.6 and 11.7 present the decision pathway for each of the three main categories. A single principle runs through them: medical or audiological measurement identifies the impairment, educational assessment determines its impact, and the educational category is assigned only when an impact on learning has been established. In the pathway for communication disorders, a hearing examination comes at the second step as a prerequisite for any language instrument.

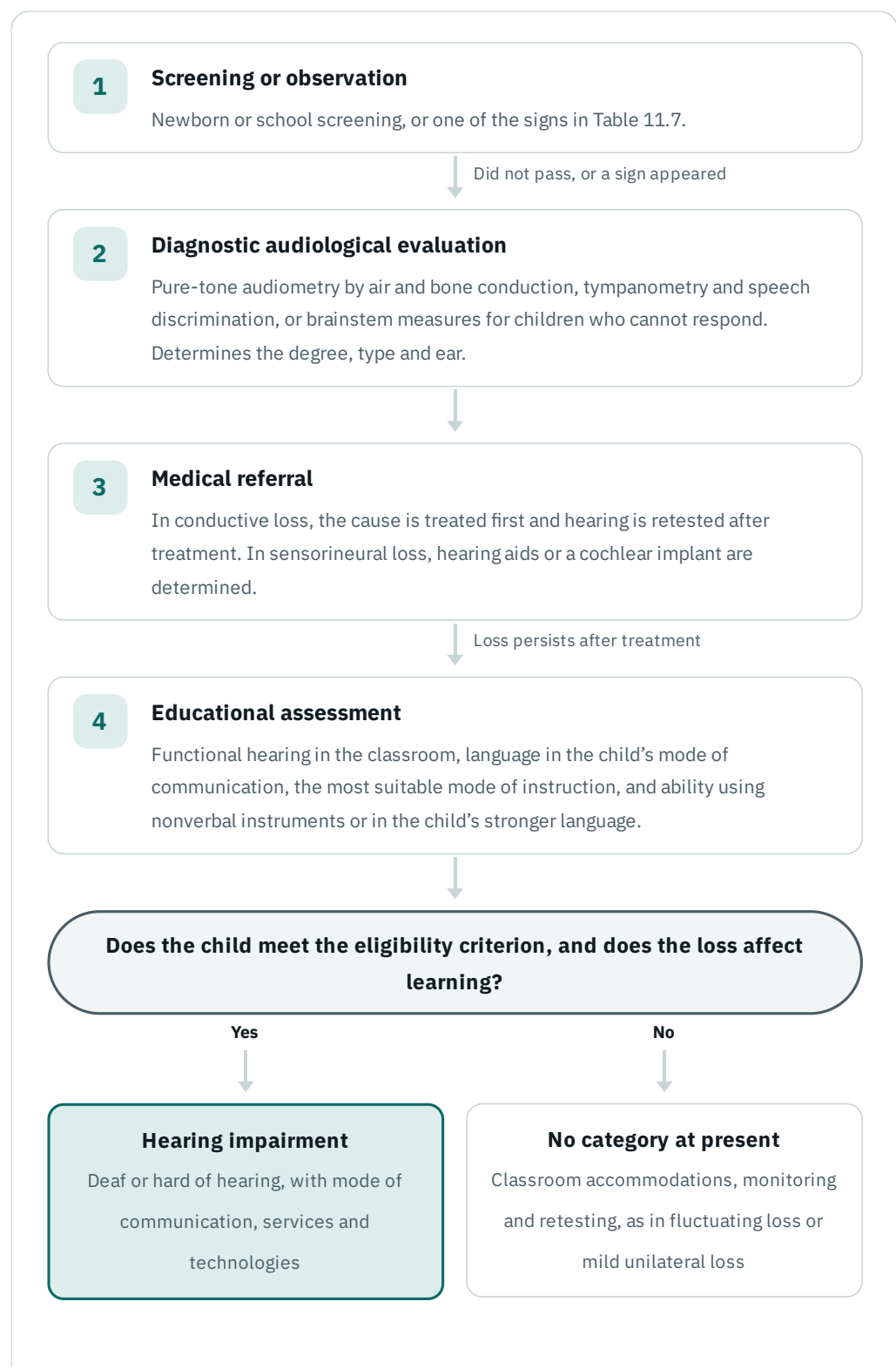


Figure 11.5: Decision pathway for hearing impairment. Under Saudi regulations, the eligibility criterion is measured in the better ear with hearing aids (see 11.12).

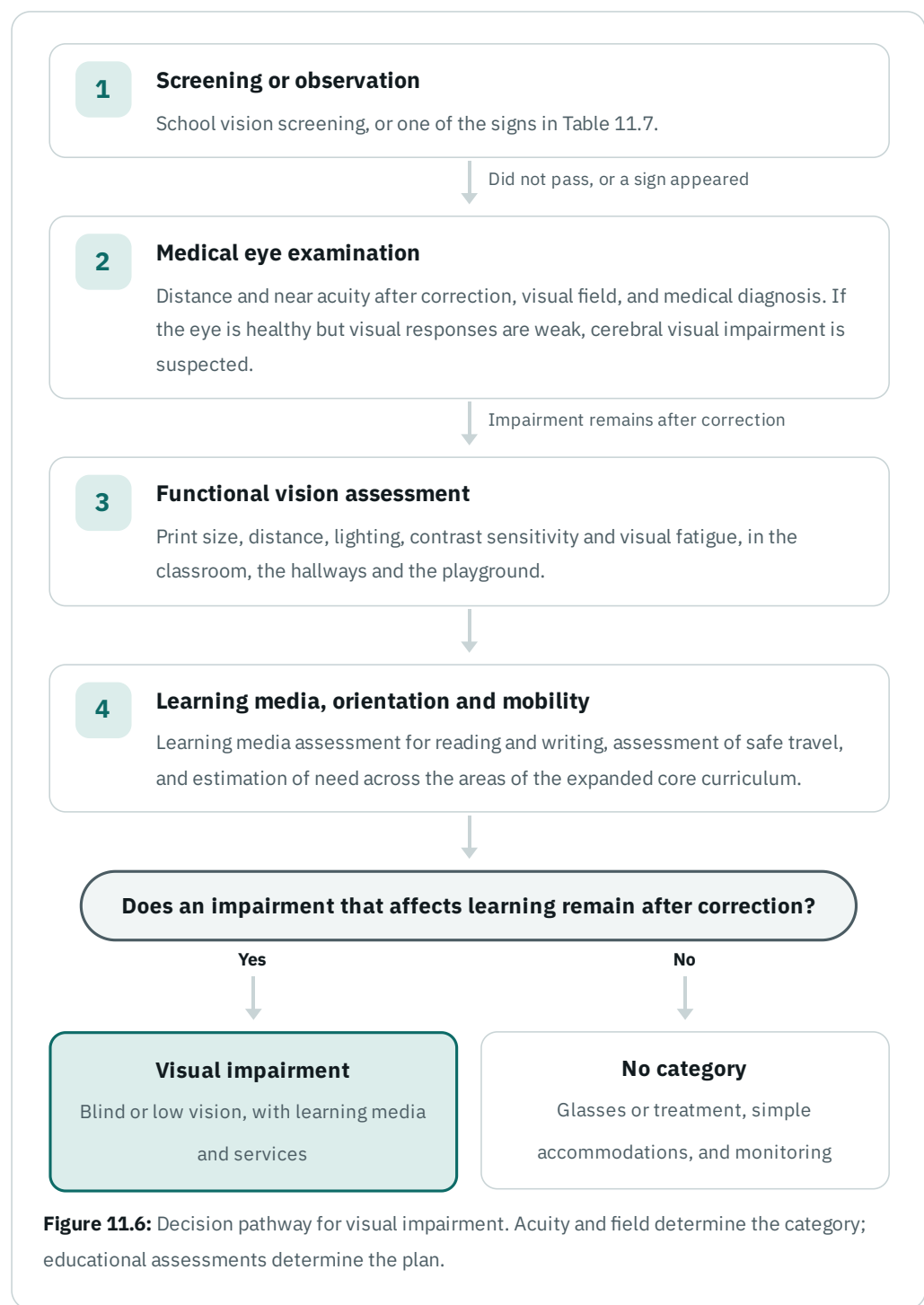


Figure 11.6: Decision pathway for visual impairment. Acuity and field determine the category; educational assessments determine the plan.

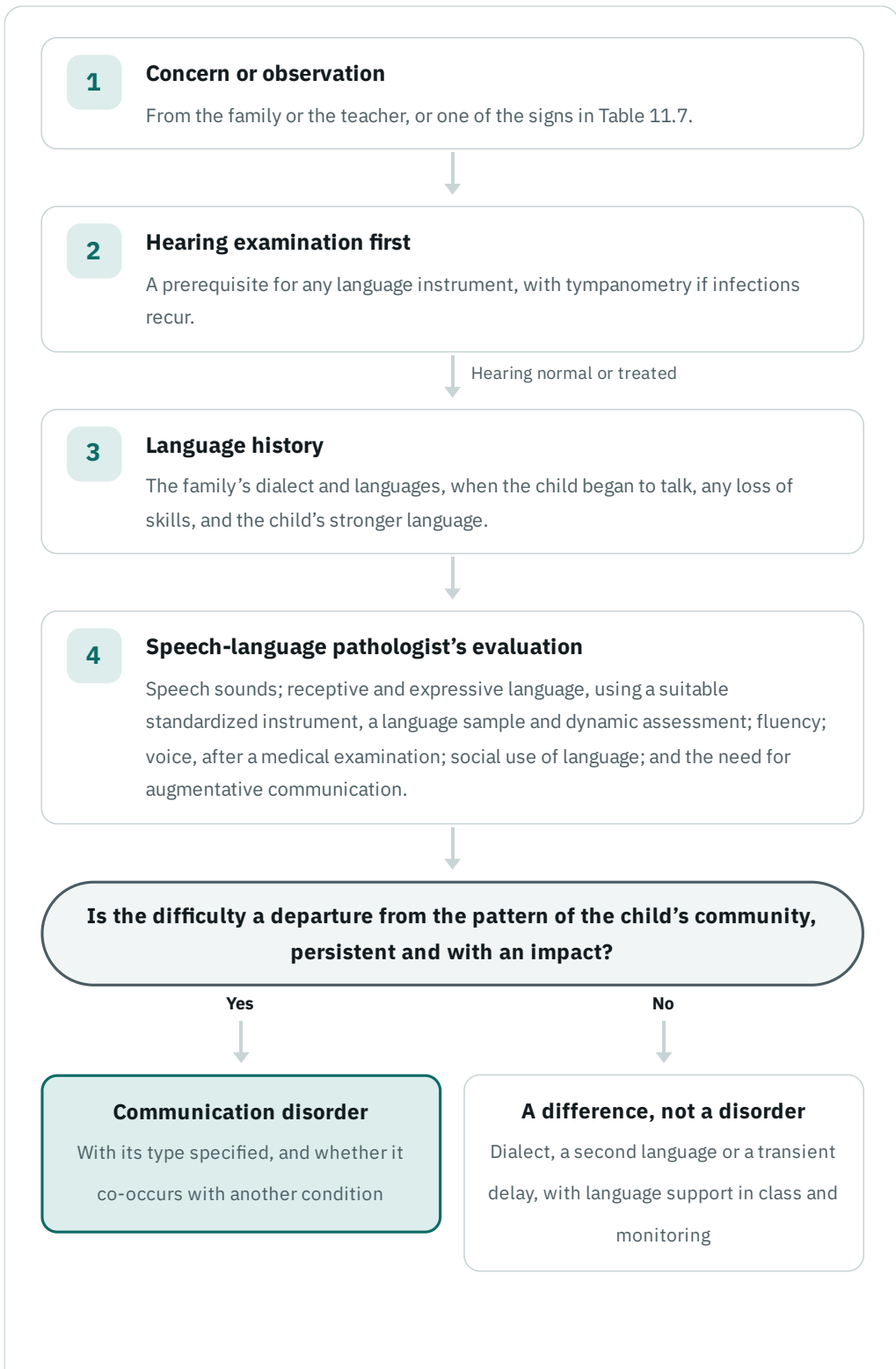


Figure 11.7: Decision pathway for communication disorders. The hearing examination at the second step is never skipped, however obvious the cause may seem.

11.9

Instrument profiles

The three profiles present core procedures in these categories: audiometry, functional vision assessment together with learning media assessment, and a comprehensive language test. The first two are professional procedures without published norms, so some fields in their tables differ from those in the test profiles. Where we were unable to verify a figure in the technical manual itself, we have written “in the technical manual.” This book does not publish the items of any test; the examples were prepared by the author.

PTA · OAE · ABR Audiometry: pure tones,
tympanometry and objective
measures

Hearing impairment

The idea

Pure-tone audiometry (**Pure-tone audiometry, PTA**) determines the softest sound the child can hear at each frequency, by air and bone conduction, and thus yields the degree and type of loss. Tympanometry shows whether the eardrum moves normally, and so indicates fluid behind it. Otoacoustic emissions and the auditory brainstem response, for their part, are **objective** measures that require no response from the child; they are used with newborns and with children who cannot respond.

What it looks like

A sound-treated booth, an audiometer, headphones, and a bone-conduction vibrator. The response method changes with age: an older infant is rewarded with a lighted toy when he turns toward the sound, a preschooler drops a block into a basket each time he hears a sound, and an older child raises his hand or presses a button. In tympanometry, a small probe is placed at the entrance of the ear canal for a few seconds.

A scene from administration

The audiologist tells a six-year-old: “Every time you hear the beep, even if it’s very soft, put the bead in the box.” She begins with a clearly audible tone at 1000 Hz, then lowers it by 10 dB each time he responds and raises it by 5 dB each time he does not, until she reaches the softest sound he responds to on most trials. She notices that the child has begun dropping the bead whenever she looks at him, responding to her glance rather than to the sound, so she varies the timing of the presentations to keep him from guessing.

Table 11.8: Profile of pure-tone audiometry, tympanometry and objective measures.

Purpose	To determine the presence, degree, type and ear of hearing loss, and to monitor it
Ages	Objective measures from birth; behavioral testing with age-appropriate methods from about 6 months, and by the conventional method from about age 5
Edition and year	A standard clinical procedure governed by professional guidelines (ASHA, 1997)
Publisher	Not applicable
Qualification level	A licensed audiologist; school screening is conducted by trained personnel under professional supervision
Time	About half an hour to an hour for a full evaluation; longer with young children

Score types	Thresholds in decibels for each frequency and ear, the pure-tone average, the word recognition percentage, and the tympanogram type (normal; flat, usually indicating fluid; or shifted toward negative pressure)
Cutoff scores	20 dB for screening; degrees of loss according to the adopted classification (Tables 11.1 and 11.2); educational eligibility limits according to the regulations (see 11.12)
Reliability	Thresholds typically vary within 5 dB between two successive tests; reliability is lower with young children and when the child cooperates poorly
Classification accuracy	High for determining degree and type in a cooperative child; a single test does not detect fluctuating loss
Year of norm collection	Not applicable; the child is compared with reference thresholds for normal hearing
Arabic version	Pure-tone testing requires no language. Speech discrimination testing, however, requires equivalent Arabic word lists; at the time of writing we had not verified any recent, published, standardized Saudi lists, so the lists used and their source should be ascertained

How are the results interpreted?

The air-conduction marks are read to determine the degree, then compared with bone conduction to determine the type: a gap between the two with normal bone conduction indicates conductive loss, whereas the two converging at a reduced level indicates sensorineural loss. The tympanogram is then read: a flat tympanogram with conductive loss suggests fluid behind the eardrum. Finally, the thresholds are compared with the speech banana to see what the child is missing, and the word recognition score is compared with what the audiogram predicts; if it is much worse, auditory neuropathy spectrum disorder is considered.

Its limits

It measures what the child hears in a quiet room; how well he understands in a noisy classroom is another matter. It gives a picture of a single day and therefore does not detect fluctuation unless testing is repeated. Behavioral testing depends on the child's cooperation and attention, so it may be inaccurate with young children or children with multiple disabilities, in which case objective measures are decisive.

FVA • LMA Functional vision assessment and learning media assessment


 A yellow rounded rectangular label with the text "Visual impairment" in black.
The idea

The medical report answers the question: what is wrong with the eye? These two assessments answer two other questions: how does the student use his vision in his daily life, and by what means does he read and write? They require no norms, because the student is compared with the demands of his environment rather than with his peers (Koenig & Holbrook, 1995).

What it looks like

A collection of tools and situations rather than a single test booklet: near and distance acuity charts, including LEA Symbols and HOTV charts for young children; contrast sensitivity charts; texts in graded print sizes; light sources; and observation checklists for the classroom, hallway and playground. In learning media assessment, reading rate and accuracy are recorded in regular print, in large print, and in braille for students who are learning it, and the way the student explores new objects is observed.

A scene from administration

A teacher gives a third-grade student three cards bearing the same text in three print sizes, asks her to read each for one minute, and records the words read correctly. She then repeats this with lighting from the side. Next, she

accompanies the student at recess and notes where she stops, where she touches the wall, and whether she recognizes her friends from a distance or only after they speak.

Table 11.9: Profile of functional vision assessment and learning media assessment.

Purpose	To determine the student’s visual needs for learning, reading and writing media, and accommodations
Ages	All ages; LEA Symbols and HOTV charts are used with young children from about age three
Edition and year	Multiple professional procedures; learning media assessment has a published guide (Koenig & Holbrook, 1995)
Publisher	Not applicable to the procedure; the learning media assessment guide is published by the Texas School for the Blind and Visually Impaired
Qualification level	A teacher of students with visual impairments, together with an orientation and mobility specialist
Time	Several sessions in different settings; learning media assessment is repeated annually or whenever vision changes
Score types	Descriptive: the most suitable print size, distance and lighting; reading rate and accuracy in each medium; and the duration of visual work before fatigue
Cutoff scores	None; the decision rests on comparing efficiency across media and against classroom demands
Reliability	Depends on the observer’s expertise and the range of settings; it is therefore repeated on different days
Classification accuracy	Not designed for classification; the category is determined by acuity and field

Year of norm collection	Not applicable
Arabic version	LEA Symbols do not depend on language. At the time of writing we know of no published Arabic guide to learning media assessment, so graded Arabic texts are prepared locally, bearing in mind that equivalent print size in Arabic script differs from that in Latin script

How are the results interpreted?

The aim is to find the medium that gives the student the best combination of accuracy, speed and comfort over sustained work. A student who reads large print at an acceptable rate without tiring has large print as her medium. A student whose visual condition is deteriorating, or whose reading rate plateaus at a level insufficient for classroom demands no matter how much the print is enlarged, may need braille as a primary or supplementary medium, even if he has some vision.

Its limits

There are no norms against which to compare the student, so its quality depends on the quality of observation. It is affected by fatigue, lighting and the day of assessment. It does not replace a medical examination, and on its own it is insufficient for cerebral visual impairment, which requires a functional assessment tailored to its patterns.

CELF-5 Clinical Evaluation of Language Fundamentals, Fifth Edition

Language

The idea

A comprehensive language battery that measures receptive and expressive language in vocabulary, sentence structure and language memory. It yields a Core Language Score, which answers the first question: does the child have a language disorder? It then provides detailed indexes that answer the second question: in which aspects of language does the difficulty lie? (Wiig et al., 2013).

What it looks like

An easel that presents pictures to the child and carries the instructions for the examiner, a record form, and a rating scale booklet. Its task types include pointing to the picture that matches a sentence the child hears, following increasingly long directions, completing a sentence about a picture, and repeating sentences accurately. It includes a pragmatics rating form completed by the examiner and another completed by a teacher or parent.

A scene from administration

The examiner says to a seven-year-old: “Touch the cat after you touch the big ball.” The girl touches the cat first. The examiner records the error and notes that the girl carried out all the short directions correctly but erred whenever a direction involved temporal order or a condition.

Table 11.10: Profile of the Clinical Evaluation of Language Fundamentals (CELF-5).

Purpose	To determine the presence of a language disorder and describe language strengths and weaknesses
Ages	5 to 21 years 11 months
Edition and year	Fifth, 2013
Publisher	Pearson
Qualification level	A speech-language pathologist or qualified examiner, in accordance with the publisher's requirements

Time	About 30 to 45 minutes for the core tests; longer for a full evaluation
Score types	Scaled scores for subtests (mean 10, SD 3), and a Core Language Score and indexes for receptive language, expressive language and others (mean 100, SD 15)
Cutoff scores	A suggested cut-off score for the Core Language Score is given in the technical manual
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. Translating its items does not produce a valid instrument, because the structures being measured are English

How are the results interpreted?

The Core Language Score is read first against the cut-off score; then the indexes are compared with one another: is reception weaker than expression, or the reverse? Does the difficulty lie in content and meaning or in structure? The result is then compared with a language sample from the child's natural speech; if the two pictures agree, the judgment is strengthened.

Its limits

It is built on English and its norms are American, so it is unsuitable for Arab children except in rare cases of a child educated in English, and even then it is interpreted with caution. In the absence of a standardized Arabic alternative,

the speech-language pathologist relies on the language sample, nonstandardized tasks built on Arabic, and dynamic assessment, and states this explicitly in the report.

💡 Assessing ability in deaf or blind students

Deaf or blind students are sometimes referred for an assessment of intellectual ability, either for placement or because a co-occurring disability is suspected. The rule is: **ability is measured through the channel that works**, and the limits of each accommodation are stated in the report.

Table 11.11: Options for assessing ability in deaf or blind students, and their limits.

Student	Option	What to watch for
Deaf or hard of hearing	The Leiter International Performance Scale, Third Edition (Leiter-3) (Roid et al., 2013), whose instructions are given entirely through gesture; the Universal Nonverbal Intelligence Test, Second Edition (UNIT2) (Bracken & McCallum, 2016); and the Nonverbal Index of the Wechsler Intelligence Scale for Children, Fifth Edition (WISC-V), made up of subtests that require no verbal response (Wechsler, 2014)	“Nonverbal” does not mean “language-free”: a child with language deprivation may perform poorly even on nonverbal tasks. Presenting the instructions in sign language through an interpreter is a change in administration conditions that must be noted in the report. We know of no published standardized Arabic versions of the first two scales
Blind or severely visually impaired	Verbal tests presented orally, such as the verbal comprehension and auditory working memory subtests of intelligence scales	They measure one aspect of ability, so no full-scale score is computed from them. Some items assume visual experience, such as questions about the colors of objects, so each item is reviewed

Student	Option	What to watch for
Low vision, reading enlarged print	Enlarging or converting visual materials	Enlargement may change an item’s difficulty and timing, and braille is slower than print; if the construct changes, the result is interpreted descriptively, apart from the norms (see 11.7)

This matter is all the more important in the Kingdom, because the Regulations require, for admission of a deaf or hard-of-hearing pupil to programs for these students, an IQ of no less than 75 on the Wechsler scale or 73 on the Stanford-Binet (Ministry of Education [Al-Ma'arif], 1422 AH [Arabic]), without specifying which edition or which part is to be administered. The known Saudi standardization of the Wechsler scale is of its older revised edition (Al-Nafi et al., 2000 [Arabic], as cited in Ejbara, 2024), and two Gulf versions of the Stanford-Binet Fifth Edition are in use (Mohammed, 2016 [Arabic]); we found no published study of the validity of any of them with deaf students. The score on which the admission decision rests should therefore be computed from the nonverbal part, and read alongside evidence of the student’s ability in other settings.

11.10

When is a judgment made? Four cases

Case 1: Khalid, age 7

Hearing loss in one ear: no judgment about attention for now

The story: Khalid is the student in the first letter. His second-grade teacher noticed that he drifted off during lessons, followed spoken instructions only after they were repeated, and watched his classmates to copy them, and that he was “present” in some lessons and “absent” in others. The teacher suspected an attention problem. When the specialist requested teacher ratings, she noticed that the complaints were strongest from the Arabic teacher, who explains while standing by the window to Khalid’s left, and weakest from the mathematics teacher, who stands at the board to his right, writes a great deal and explains with visual examples. In a quiet one-to-one session, with the specialist seated facing him, his attention was good and his questions were to the point. His mother reported that he turns his head when spoken to, always holds the phone to his right ear, and cannot tell where someone is calling him from in the market. Khalid had passed newborn hearing screening and had never been screened at school. The team therefore postponed the attention assessment and requested hearing screening first.

Table 11.12: Evidence in Khalid’s case.

Source	Result
School screening	Passed in the right ear; heard none of the tones in the left ear, including on retest
Audiological evaluation	As in Figure 11.1: the right ear is normal, and the left shows a moderate-to-severe sensorineural loss. Tympanograms are normal in both ears, so there is no fluid. Speech discrimination in noise is clearly weaker when speech comes from his left side
Ear, nose and throat physician	No medically treatable cause. The loss most likely developed after birth, since he passed newborn screening. Annual testing is requested, because some unilateral losses change over time

Source	Result
Classroom observation	He sits near the window, with the air conditioner on his right and the Arabic teacher on his left. He often turns to the classmate beside him after spoken instructions
Attention ratings	High from the Arabic teacher, low from the mathematics teacher, and few concerns at home
Speech-language pathologist (brief screening)	His vocabulary and sentence structure are age-appropriate. His spelling errors cluster in soft, high-pitched sounds such as s, f and th

Decision: No judgment of ADHD is made for now. Nor does Khalid meet the “hard of hearing” criterion in the Saudi regulations, because that criterion is measured in the **better ear**, and his right ear is normal. Still, the loss is permanent and its effect in the classroom is evident. It is worth noting here that the US legal definition of hearing impairment requires only an effect on learning, without stipulating a degree or both ears (U.S. Department of Education, 2006, 34 CFR §300.8(c)(5)). The team recommends, immediately and without waiting for any decision, that he sit at the front of the classroom with his right ear toward the teacher and away from sources of noise, that he be able to see the speaker’s face, that important instructions be written down, and that his understanding be checked by asking him what he has been asked to do rather than “Do you understand?” The audiologist will weigh the benefit of a wireless hearing system (**Remote microphone system**) that carries the teacher’s voice to his good ear. His attention will then be reconsidered after several months of these accommodations: if symptoms of inattention persist in two settings under adequate listening conditions, the team will proceed with an evaluation (see Chapter 10).

The lesson of the case: What looked like inattention had an auditory explanation. Khalid does not follow instructions because he does not hear them in full when they come from his left or through noise, and he copies his classmates to find out what is expected. The clue that alerted the team was the way his performance varied with where the speaker stood and how material was presented. A child who “hears well” in face-to-face conversation may have a severe loss in one ear that only testing each ear separately will reveal.

What evidence could change the decision? If symptoms of inattention persisted at home and at school after months of suitable seating and the hearing system, the team would go ahead with an attention evaluation. If annual testing showed a decline in the right ear, his standing under the “hard of hearing” criterion and his services would both change.

Case 2: Rahaf, age 6 Moderate low vision

The story: Rahaf’s teacher noticed that she held the book close to her face, tilted her head and grew tired after a few minutes of reading. Her acuity was poor on the school vision screening, so she was referred to an ophthalmologist, who diagnosed a retinal disease. Her best-corrected distance acuity with glasses was 6/36 in the better eye, that is, moderate low vision, and her visual field was normal.

Table 11.13: Results of Rahaf’s educational assessments.

Educational assessment	Result
—	She reads comfortably in large print about three times the size of her textbook’s font, at a distance of 15 centimeters, with side lighting. She cannot see the board from her seat. She struggles with faded photocopied worksheets, which indicates low contrast sensitivity
—	She explores her surroundings mainly through vision, reads enlarged print at a reasonable speed for her age, and does not tire of it as she does of regular print
Orientation and mobility	She moves around the school safely in daylight, hesitates on the dimly lit stairs and touches the handrail
Early reading assessment	Her errors on similar-looking letters almost disappear when the print is enlarged, so the difficulty lies in seeing, not in reading

Decision: Visual impairment with moderate low vision, which falls within the “low vision” range in the Saudi regulations (6/24 to 6/60). Her primary learning medium is enlarged print, together with magnification devices, a copy of the board content on her desk and high-contrast worksheets. The stairs are to be lit, and she will be trained to move on them. Her learning medium will be reassessed annually, because her retinal condition may change.

What evidence could change the decision? If her acuity declined or her field narrowed as the retinal disease progressed, or if her reading speed in large print leveled off below what her class demands, the learning medium would need to be reassessed and braille considered as a supporting medium.

Case 3: Abdulrahman, age 6

Sound dialect, and a pattern that warrants treatment

The story: He is the child the kindergarten teacher described in the third message: he says “galam” (گلم) instead of “qalam” (قلم) and “tamaka” (تمكة) instead of “samaka” (سمكة). His hearing was tested first and found to be normal. The speech-language pathologist then evaluated him, asked the family about their own pronunciation and listened to a sample of his conversation with his mother.

Table 11.14: Observations in Abdulrahman’s case and their interpretation.

Observation	Interpretation
He pronounces /q/ as /g/ in every word	As his family does. A dialectal difference, not a disorder
He replaces s, sh and z with t or d, in every position in the word	This does not occur in his family’s dialect, and it affects an entire class of sounds
His vocabulary and sentences are age-appropriate, and his comprehension is good	Language is intact; the problem lies in speech sounds alone
Unfamiliar listeners cannot understand about a third of his words	A clear effect on communication
Hearing is normal	Hearing loss is ruled out as a cause of this pattern

How the specialist read the evidence: Studies of the acquisition of Arabic consonants indicate that mastery of some fricatives comes late in Arabic and may extend beyond school entry (Amayreh & Dyson, 1998; Amayreh, 2003). At the time of writing, we found no published Arabic norm specifying the age at which stopping disappears. Had

Abdulrahman's error involved a single late-mastered sound, watchful waiting and follow-up would have been the better course. What tipped the judgment was three things taken together: the substitution covers an entire class of sounds, it reduces his intelligibility to unfamiliar listeners at an age when he is expected to be understood, and his family's dialect does not explain it.

Decision: Speech sound disorder, manifested in the replacement of fricatives with plosives. Speech therapy sessions are recommended. His pronunciation of /q/ is not treated; he will learn Standard Arabic at school as his classmates do.

What evidence could change the decision? If samples of his speech in other settings showed that the substitution is limited to one or two late-mastered sounds, or that unfamiliar listeners understand most of what he says, monitoring would be preferable to treatment.

Case 4: Mashael, age 14

Deaf, with no additional learning disability

The story: Mashael is in the second year of middle school. She has been deaf since birth, with a profound bilateral sensorineural loss, and wears two hearing aids of limited benefit. Her parents are deaf, so she grew up with Saudi Sign Language from birth. This year she moved to a new school, and her Arabic teacher noticed that her reading and writing were at roughly a fourth-grade level. The teacher asked: does she have a learning disability, or low intellectual ability?

Table 11.15: Evidence in Mashael's case.

Source	Result
Language history	Full exposure to sign language from birth; she learned written Arabic at school as a second language, accessed through reading
Nonverbal intelligence test with gestural instructions, administered by a psychologist with a teacher fluent in sign language present	Average (a score of 108 on American norms, read with caution in the absence of Arabic norms)
Sign language narrative sample, evaluated by a deaf teacher fluent in the language	She retold a picture story in precise sequence and rich detail, using advanced signed constructions, at a level appropriate for her age
Mathematics	At grade level in arithmetic, weaker on written word problems
Arabic writing	Errors in attached pronouns, prepositions and agreement, which are common among learners of Arabic as a second language. Her vocabulary is good in the topics she has been taught
Previous school's report	Her reading improved markedly when the teacher explained texts to her in sign language before she read them

How the team read the evidence: Had Mashael been assessed with a verbal intelligence test in Arabic, her score would have come out low, and the team would have concluded that she has an intellectual disability. Had her language development been judged by her Arabic writing alone, they would have concluded that she has a language

disorder. Yet her first language is intact and rich, her nonverbal ability is average, and her weakness is confined to her second language and improves when the text is explained to her in her first. This is the pattern of a second-language learner, not of a learning disability.

Decision: Mashael remains in the hearing impairment category, with no added diagnosis of learning disability or intellectual disability. Explicit instruction in Arabic reading and writing that builds on sign language is recommended, along with test instructions delivered in sign language and an interpreter or a teacher fluent in it during lessons. Should she show difficulty in sign language itself, or in arithmetic despite full access to instruction, that would be grounds for reconsidering a co-occurring learning disability.

The lesson of the case: A deaf student's language development is measured in the student's stronger language. Delay in written Arabic alone proves neither a learning disability nor any other disability, because it is to be expected of anyone who learns Arabic as a second language without hearing it.

What evidence could change the decision? If her Arabic reading made no meaningful progress after a sufficient period of explicit instruction building on sign language, or if a second signed narrative sample revealed a weakness absent from the first, the team would reconsider a co-occurring learning disability.

11.11 Differential diagnosis and co-occurrence

Similar conditions

Sensory disabilities and communication disorders resemble many categories, and many categories resemble them. Table 11.16 brings together the conditions that recur most often in referrals, and the evidence that distinguishes them.

Table 11.16: Differential diagnosis in sensory disabilities and communication disorders.

What it looks like	What it may be	Distinguishing evidence
Inattention	Hearing loss, including fluctuating and unilateral loss	Performance improves when the student can see the speaker's face or the instruction is written, and fluctuates with bouts of ear infection. Hearing is tested before any attention measure
Difficulty in reading or spelling	Low vision or hearing loss	Visual errors disappear when print is enlarged; auditory errors concentrate on the sounds the child cannot hear
Autism spectrum disorder	Hearing loss, deafblindness or developmental language disorder	Intact nonverbal communication and a desire to interact, with improvement once the sensory barrier is removed. Restricted and repetitive patterns are absent in developmental language disorder
Intellectual disability	Sensory or motor disability, language deprivation, developmental language disorder or brain injury	Performance on a tool suited to the functioning channel, adaptive behavior, nonverbal ability and pre-injury performance

What it looks like	What it may be	Distinguishing evidence
Central auditory processing disorder	Inattention, developmental language disorder or undetected hearing loss	Full audiological evaluation, followed by assessment of language and attention, before this explanation is accepted (see 11.2)
Language disorder	Dialectal difference or second-language learning	Judgment against the standard of the child’s dialect, assessment of the child’s other language, and dynamic assessment
Communication disorder (does not speak at school)	Selective mutism	Speaks fluently at home, as family recordings confirm. The diagnostic manual classifies it among the anxiety disorders
Low vision originating in the eye	Cerebral visual impairment	The eye examination is normal or does not explain the impairment, with distinctive patterns on functional assessment

Co-occurring condition

Many causes of deafness and blindness, such as extremely preterm birth, certain infections before and after birth, and genetic syndromes, also affect the brain, so other disabilities occur alongside the sensory disability in the same child. Surveys report that a considerable proportion of deaf and hard-of-hearing children have an additional disability, and that visual impairment is common among children with cerebral palsy and multiple disabilities, although estimates vary with samples and definitions. Developmental language disorder, for its part, frequently co-occurs with dyslexia, ADHD and developmental coordination disorder. Each combination carries its own guidance for assessment:

- **Sensory disability with suspected intellectual disability:** A judgment of intellectual disability requires both a tool suited to the functioning channel and adaptive behavior that supports it; where this is not possible, the judgment is deferred, as in Salman's case.
- **Hearing impairment with a suspected learning disability:** Evidence is sought from outside the second language, such as difficulty in sign language itself, or in arithmetic despite full access to instruction, as in Mashael's case.
- **Sensory disability with suspected autism:** The sensory loss is addressed first, with a hearing aid, glasses or accommodations, and the social symptoms are then reconsidered. Any autism measure used with a deaf or blind child is interpreted with great caution, because its items assume intact hearing and vision.
- **Developmental language disorder with reading difficulty:** Listening comprehension and decoding are each measured separately; if both are weak, the two problems co-occur.
- **Developmental language disorder with inattention:** Instructions for attention measures are given in simple language, and the team observes whether the student's attention also falters on nonlinguistic tasks; if it falters only on language tasks, language is the more likely explanation.
- **Stuttering with social anxiety,** especially in adolescents: the students themselves are asked about the situations they avoid and how they feel in them, because avoidance may disrupt their lives more than the stuttering itself.

11.12

In the Saudi and Arab context

 In the Saudi context: How are this chapter’s categories defined?

The Special Education Organizational Guide adopts eleven categories, six of which concern this chapter: hearing impairment, visual impairment, language and speech disorders, multiple impairments, physical and health impairments, and deafblindness (Ministry of Education, 1436 AH [Arabic]). The Regulations for Special Education Institutes and Programs set the levels of hearing and vision on which admission is based (Ministry of Education [Al-Ma'arif], 1422 AH [Arabic]). Table 11.17 compares these regulations with the two diagnostic classifications and with US law.

Table 11.17: This chapter's categories in the diagnostic classifications, US law and the Saudi regulations.

Category	DSM-5-TR, ICD-11 and the World Health Organization	US law (IDEA)	Saudi regulations
Hearing impairment	Not a disorder in the diagnostic manual. The World Health Organization grades severity by the four-frequency average in the better ear, with loss beginning at 20 decibels	Two categories: deafness, when the child cannot process linguistic information through hearing even with amplification; and hearing impairment, whether permanent or fluctuating. No numbers are given, and an effect on educational performance is required	Deaf: a loss of 70 decibels or more; hard of hearing: 35 to 69 decibels; in the better ear after the use of hearing aids, as reported by an accredited specialist body. Admission to their programs requires an IQ of no less than 75 on the Wechsler scale or 73 on the Stanford-Binet (the Regulations, Article 4)

Category	DSM-5-TR, ICD-11 and the World Health Organization	US law (IDEA)	Saudi regulations
Visual impairment	Categories of acuity in the better eye; blindness is worse than 3/60, or a field no more than 10 degrees in radius	An impairment in vision that, even with correction, affects educational performance, including partial sight and blindness. No numbers are given	Blind: acuity below 6/60 in the better eye after correction, or a visual field of less than 20 degrees; low vision: 6/24 to 6/60 (the Regulations; the Organizational Guide)
Communication disorders	Four disorders in DSM-5-TR; in ICD-11, developmental language disorder, with pragmatic impairment as one of its subtypes	Speech or language impairment: stuttering, impaired articulation, a language impairment or a voice impairment	A category of “language and speech disorders.” In the sources we were able to verify, we found no published eligibility criteria for it

Category	DSM-5-TR, ICD-11 and the World Health Organization	US law (IDEA)	Saudi regulations
Multiple, physical and health impairments, and brain injury	No umbrella category; each condition is diagnosed on its own, and ICD-11 allows a “provisional” category of intellectual disability when assessment is not feasible	Five separate categories: deaf-blindness, multiple disabilities, orthopedic impairment, other health impairment and traumatic brain injury	Three categories: multiple impairments, deafblindness, and physical and health impairments. There is no separate category for brain injury. We have not verified the text of their definitions and detailed criteria
Who decides	The audiologist and ophthalmologist for measurement, and the speech-language pathologist for communication	A team of qualified professionals together with the parents	The school assessment team, after the guardian’s written consent, together with a report from the specialist body for hearing and vision (the Organizational Guide)

Category	DSM-5-TR, ICD-11 and the World Health Organization	US law (IDEA)	Saudi regulations
Reevaluation	Depending on the condition	At least every three years, unless the parents and the agency agree otherwise	The diagnosis is repeated no sooner than 6 months and no later than 18 months after the initial diagnosis, and thereafter as needed (the Organizational Guide)

Two points emerge from the table. First, the Saudi regulations classify a student as educationally blind within wider limits than the international classification: a student with an acuity of 4/60 has “severe low vision” under the international classification but is “blind” under the regulations. This makes educational sense, since students in this range usually need the media used by blind learners. Second, the hearing criterion is measured with hearing aids, so it captures the disability that remains after intervention, whereas the audiologist measures the underlying loss unaided. The team must therefore be sure which of the two measurements a report refers to. The Law on the Rights of Persons with Disabilities affirms the right to “modern measurement and diagnostic tools” and to early intervention programs and early detection of disability (Law on the Rights of Persons with Disabilities, 1445 AH [Arabic], Arts. 8 and 9).

Newborn hearing screening in the Kingdom: The National Newborn Hearing Screening Program has operated since 2016. In 2021, 199,034 newborns were screened, a coverage rate of 92.6%, and 1.87% did not pass

and were referred (Allothman et al., 2024). A systematic review of thirteen Saudi studies identified six challenges facing the program, among them low awareness, loss of some children to follow-up after referral, and weak data-entry and tracking systems (Alanazi & Nicholson, 2025). For the school team, this means that a child's having been screened at birth does not always mean that diagnostic follow-up took place if the child did not pass, so the question should be asked explicitly. At the time of writing, we found no published official Ministry of Health page on the program that we could consult, and no published text establishing a national hearing and vision screening program at school entry or its protocol.

A question for reflection: Khalid has a permanent, moderate-to-severe sensorineural loss in one ear, and his other ear is normal. Does he meet the “hard of hearing” criterion in the Saudi regulations? If not, where will he obtain the accommodations he needs? And should unilateral loss be named explicitly in the regulations, as the World Health Organization's classification does?

Available Arabic instruments

Table 11.18 gathers the Arabic instruments and studies in this chapter's areas that we found published at the time of writing. It makes no claim to completeness, nor does it replace verifying the licensing and norms of any instrument before it is used in a decision.

Table 11.18: Published Arabic instruments and studies in sensory disabilities and communication.

Area	Study or instrument	Country and sample	What it offers	Limitations
Acquisition of Arabic consonants	Amayreh & Dyson (1998)	Jordan; preschool children	Order of consonant acquisition and approximate ages of mastery	A descriptive study, not a standardized test, and the sample's dialect is Jordanian
Completing the consonant inventory	Amayreh (2003)	Jordan; older children	The ages by which the late sounds are mastered	A descriptive study, and the sample's dialect is Jordanian
Intelligence with a nonverbal component	Two Gulf versions of the Stanford-Binet Intelligence Scales, Fifth Edition (Mohammed, 2016 [Arabic])	Used in the Kingdom; we have not verified the two norming samples	Half of the scale is nonverbal	We found no published study of their validity with deaf students
Purely nonverbal intelligence	At the time of writing, we know of no published standardized Arabic version of the Leiter scale or the Comprehensive Test of Nonverbal Intelligence			
Comprehensive language tests	At the time of writing, we know of no published standardized Arabic version of the Clinical Evaluation of Language Fundamentals or any equivalent			

Area	Study or instrument	Country and sample	What it offers	Limitations
Saudi Sign Language	At the time of writing, we know of no published standardized instrument for assessing it			
Speech discrimination testing	We have not verified any recent published standardized Saudi word lists			
Learning media assessment for blind students	At the time of writing, we know of no published Arabic guide			

The gap is clear: most of what the team needs in these categories, from a standardized Arabic language test, to a tool for assessing Saudi Sign Language, to Arabic norms for sound acquisition in the dialects of the Kingdom, is not available in published form. Until that gap is filled, assessment relies on language samples, dynamic assessment and tools that do not depend on language, with every report stating the source and limits of each piece of evidence.

Conclusion

The central argument we have sought to develop in this chapter is that the number produced by a device or a medical examination is where educational judgment begins, not where it ends. The audiogram and vision measurements establish the degree and type of loss, but what this means for the student's learning calls for functional assessment and learning media assessment, and a deaf student's language development is measured in the student's stronger language. It follows that hearing and vision screening should precede any diagnostic tool; that the team should watch for forms that are easily missed, such as fluctuating and unilateral loss and auditory neuropathy; that neither

dialect nor second-language learning should be treated as a disorder; and that the report should name the classification it has adopted for degrees of hearing and vision.

The hardest judgments we have discussed remain those in multiple disabilities and deafblindness, where standardized tools usually fall away. Judgment then rests on repeated functional and communicative assessment in natural settings, and no degree of intellectual disability is assigned when it cannot be validly measured. The line between an accommodation that preserves the norms and one that invalidates them remains a matter of judgment in each case: what changes the mode of access usually preserves them, and what changes the construct invalidates them, in which case the result is reported descriptively.

11.13**Summary, key terms and activities**

Chapter summary

- Hearing and vision screening is the gateway of exclusion in every diagnosis and precedes any diagnostic tool, because impairment in either can resemble any other category.
- The audiogram shows the softest sound a child hears at each frequency, and comparing air and bone conduction determines the type of loss. Fluctuating and unilateral loss and auditory neuropathy are forms the team can easily miss.
- Classifications of degrees of hearing and vision differ across sources, and between the international classification and the Saudi regulations, so the report names the classification it has adopted.
- Vision is measured through distance and near acuity, visual field and contrast sensitivity, complemented by functional vision assessment,

learning media assessment, orientation and mobility, and the areas of the expanded core curriculum.

- Communication disorders are of five types, including voice disorders, and are assessed by the speech-language pathologist after hearing has been tested. Developmental language disorder does not require a discrepancy with nonverbal intelligence.
- Dialect is not a disorder, second-language learning is not a language disorder, and a deaf student's language development is measured in the student's stronger language.
- In multiple disabilities and deafblindness, standardized tools usually fall away, so judgment rests on repeated functional and communicative assessment in natural settings, and no degree of intellectual disability is assigned when it cannot be validly measured.
- An accommodation that changes the mode of access usually preserves the norms; one that changes the construct invalidates them, and the result is then reported descriptively.

Glossary of terms

Audiogram	A chart showing the softest sound a person hears at different frequencies in each ear.
Decibel	The unit for measuring sound intensity; the higher the value, the louder the sound.
Bone conduction	Transmission of sound to the inner ear through the bones of the skull, bypassing the outer and middle ear.

Conductive hearing loss	Loss arising in the outer or middle ear, shown by a gap between air and bone conduction; it may be temporary or fluctuating.
Sensorineural hearing loss	Loss arising in the inner ear or the auditory nerve, usually permanent.
Auditory neuropathy spectrum disorder	A disorder in which the inner ear functions but the signal is not transmitted to the brain in an orderly way, so speech understanding is poorer than the audiogram would predict.
Tympanometry	A measurement of eardrum movement; a flat tracing usually indicates fluid behind the eardrum.
Saudi Sign Language	A complete natural language used by deaf people in the Kingdom, with its own vocabulary and grammar.
Language deprivation	A child's reaching an advanced age without a fluent language, spoken or signed, because full access to a language was never provided.
Visual acuity	Clarity of sight, expressed as a fraction such as 6/6 and measured at distance and near.
Contrast sensitivity	The ability to distinguish an object from its background when their colors are close.
Visual field	The area a person can see without moving the eyes.
Functional vision assessment	An assessment of how a student actually uses vision in learning situations and daily life.

Learning media assessment	An assessment that determines the most suitable medium for a student with low vision or blindness to learn reading and writing.
Expanded core curriculum	Skills that a student with visual impairment needs to be taught explicitly, in nine areas, including braille, orientation and mobility, and independent living.
Cerebral visual impairment	Impairment in the brain's processing of what the eye sees, with the eye itself intact or nearly so.
Developmental language disorder	A persistent language difficulty with functional impact, not associated with a known condition such as hearing loss, autism or intellectual disability, and not requiring a discrepancy with nonverbal intelligence.
Speech sound disorder	Persistent difficulty producing speech sounds that is not appropriate for age and interferes with the intelligibility of the child's speech.
Stopping	Replacing a fricative sound, such as s, with a plosive sound, such as t.
Voice disorders	A departure in the quality, pitch, loudness or resonance of the voice from what suits the speaker's age and sex.
Augmentative and alternative communication	Means that supplement or replace speech, such as signs, pictures and speech-generating devices.

Tactile communication	Communication that relies on touch, such as signs the child feels with a hand placed over the speaker’s hand.
Pre-symbolic communication	A stage at which the child communicates through body movements, facial expressions and actions, before words, signs and pictures.
Dialectal difference	Pronunciation that matches the child’s dialect and community; it is not considered a disorder even when it differs from Standard Arabic.

Dynamic assessment, accommodation, cut-off score and norming sample are terms defined in Chapters 2, 3 and 5.

Review questions

1. On an audiogram, the air-conduction marks for both ears fall at about 35 decibels across all frequencies, and the bone-conduction marks at 5 decibels. What are the degree and type of loss? What does the child miss in speech? How does this differ from the left ear in Khalid’s audiogram, and from its effect in the classroom? (Objective 1)
2. A child’s average threshold in the better ear is 38 decibels. Classify the loss using Clark’s classification and the World Health Organization’s classification, then state whether the child meets the “hard of hearing” criterion in the Saudi regulations, and what information is missing to decide. (Objectives 1 and 2)
3. A student has an acuity of 6/9 but bumps into objects, cannot see the whole board and struggles with faded worksheets. Which two measurements would you request? And in which category might the student fall if the field narrowed to 15 degrees, under the Saudi regulations and the international classification? (Objective 2)

4. Why is the ophthalmologist's report not enough to plan the education of a student with low vision? Name three things that educational assessments add. (Objective 2)
5. A girl whose voice has been hoarse for three months, a boy who stutters and avoids answering orally, and a child whom only his family can understand. For each, identify the likely type of disorder, who assesses it and the first assessment step. (Objective 3)
6. A seven-year-old has clearly weak language, a nonverbal IQ of 84 and age-appropriate adaptive behavior outside language. Can he be diagnosed with developmental language disorder? Justify your answer using what the CATALISE consensus concluded. (Objective 4)
7. A five-year-old who grew up speaking Urdu joined an Arabic-medium kindergarten six months ago and makes frequent errors in Arabic sentence structure. How would you distinguish normal language learning from a language disorder? (Objective 4)
8. A student with cerebral palsy responds on an intelligence test by looking at the answer choice instead of pointing with her finger; on another test, time limits were removed for her on tasks that measure processing speed. In which of the two cases can the score be interpreted against the norms, and why? (Objective 5)
9. Propose a four-step assessment plan for a four-year-old girl with partial deafblindness who neither speaks nor signs. Who takes part? Where is the assessment carried out? What is recorded? (Objective 6)
10. Choose another special education category, such as learning disabilities or autism spectrum disorder, and show at which step in its decision pathway hearing and vision screening must appear, and what happens to the validity of the remaining tools if it is delayed. (Objective 7)

Case for application

Hadi, age 16, first year of secondary school

The story: Eight months ago, Hadi sustained a moderate brain injury in a car accident. He spent weeks in the hospital and then returned to school. His teachers say he is “no longer the Hadi we knew”: he is slow, forgets what was explained the day before, tires before midday and is quick to anger. One teacher suggested moving him to a program for intellectual disability. With his family’s consent, the team gathered the following data.

Table 11.19: Data in Hadi’s case.

Source	Result
Pre-injury achievement record	Grade averages between 85% and 92% in middle school, with no previous referral
Individual intelligence test (seventh month after the injury)	Full-scale score 74; verbal comprehension 94, reasoning 88, working memory 70, processing speed 62
Adaptive behavior scale (mother’s ratings)	Low average, with weakness in managing his time and his medications
Hearing and vision	Hearing is normal; the eye examination is normal, but he reports double vision when tired
Medical report	Marked improvement between the third and sixth months, with some further improvement expected
Classroom observation	He answers well in oral discussion early in the day, and his performance drops clearly after the fourth period

Tasks: (1) Does the evidence support a diagnosis of intellectual disability? Justify your answer with at least three pieces of evidence. (2) Under which category could Hadi be served in the Saudi regulations, given that there is no separate category for brain injury? And what would you need to verify to do so? (3) When would you reassess his ability, and why? (4) Propose three accommodations that need not wait for the decision. (Objectives 5, 6 and 7)

Learning activities

Any activity carried out with children or families is conducted with the consent of the family and the school administration, without any data that could identify the child, and under the supervision of a specialist, and its results are not used in any decision concerning the child.

1. **Reading an audiogram:** Draw three hypothetical audiograms for three children: a mild conductive loss, a moderate bilateral sensorineural loss and a severe sensorineural loss in one ear. Describe what each child hears in class, and propose three classroom accommodations. *Output:* three audiograms with a paragraph for each; about one hour. (Objective 1)
2. **Simulating a narrow field and low contrast:** Hold a paper tube in front of your eye and try to find a book on a shelf, then read a page that has been photocopied faintly. Write what you have learned about the needs of a student with a restricted field or low contrast sensitivity, noting that a simulation does not convey the real experience of disability. *Output:* one page; about 30 minutes. (Objective 2)
3. **Dialect checklist:** Record five minutes of a child's conversation with the family, and identify the sounds the child pronounces in the family dialect and the sounds that warrant evaluation. *Desk-based alternative:* List ten dialect features in your region that a teacher from another region might mistake for articulation errors, together with their Standard Arabic equivalents. *Output:* a table; about one hour. (Objective 4)

4. **A communication profile for a nonspeaking child:** Choose Salman's case or a similar hypothetical case, and write a one-page profile that answers the four augmentative and alternative communication assessment questions in 11.4 and proposes a first means of communication to try. *Output:* one page; about one hour. (Objective 6)
5. **Comparing systems:** Apply the Saudi regulations column of Table 11.17 to the cases of Khalid, Rahaf, Mashael and Salman, and write for each case: Would the regulations have reached the same decision? On what evidence would it rest? What does the text leave unresolved? *Output:* a table with commentary; about one hour. (Objectives 2 and 7)

Chapter references

- Mohammed, H. A. A. (2016). [Differences between the two Gulf versions of the Stanford-Binet Intelligence Scales, Fifth Edition, in assessing and diagnosing intelligence and mental abilities among persons with disabilities in the Northern Borders Region] [In Arabic]. *Jazan University Journal of Human Sciences*, 5(Suppl.), 236–254.
<https://search.mandumah.com/Record/1103082>
- Law on the Rights of Persons with Disabilities, Royal Decree No. (M/27) (11/2/1445 AH) [In Arabic]. <https://ymplatform.com/sdys/>
- 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%20201422.pdf>
- Alanazi, A. A., & Nicholson, N. (2025). Challenges of newborn hearing screening programs in Saudi Arabia: A systematic review. *Audiology Research*, 15(2), Article 34.
<https://doi.org/10.3390/audiolres15020034>
- Alothman, N., Elbeltagy, R., & Mulla, R. (2024). Universal newborn hearing screening program in Saudi Arabia: Current insight. *Journal of Otology*, 19(1), 35–39.
<https://doi.org/10.1016/j.joto.2024.01.002>

- Amayreh, M. M. (2003). Completion of the consonant inventory of Arabic. *Journal of Speech, Language, and Hearing Research, 46*(3), 517–529.
- Amayreh, M. M., & Dyson, A. T. (1998). The acquisition of Arabic consonants. *Journal of Speech, Language, and Hearing Research, 41*(3), 642–653. <https://doi.org/10.1044/jslhr.4103.642>
- American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.). <https://doi.org/10.1176/appi.books.9780890425787>
- American Speech-Language-Hearing Association. (1997). *Guidelines for audiologic screening*.
- American Speech-Language-Hearing Association. (2005). *(Central) auditory processing disorders* [Technical report].
- Bishop, D. V. M., Snowling, M. J., Thompson, P. A., Greenhalgh, T., & the CATALISE-2 consortium. (2017). Phase 2 of CATALISE: A multinational and multidisciplinary Delphi consensus study of problems with language development: Terminology. *Journal of Child Psychology and Psychiatry, 58*(10), 1068–1080.
- Bracken, B. A., & McCallum, R. S. (2016). *Universal Nonverbal Intelligence Test* (2nd ed.). PRO-ED.
- Clark, J. G. (1981). Uses and abuses of hearing loss classification. *ASHA, 23*(7), 493–500.
- Ejbara, M. A. (2024). Psychometric characteristics of a Saudi version of Wechsler Intelligence Scale for Preschool and Young Children. *Dirasat: Educational Sciences, 51*(2), 35–52. <https://doi.org/10.35516/edu.v51i2.6661>
- Individuals with Disabilities Education Improvement Act of 2004 (IDEA), 20 U.S.C. § 1400 et seq. (2004).
- Joint Committee on Infant Hearing. (2019). Year 2019 position statement: Principles and guidelines for early hearing detection and intervention programs. *Journal of Early Hearing Detection and Intervention, 4*(2), 1–44.
- Koenig, A. J., & Holbrook, M. C. (1995). *Learning media assessment of students with visual impairments: A resource guide for teachers* (2nd ed.). Texas School for the Blind and Visually Impaired.
- Norbury, C. F., Gooch, D., Wray, C., Baird, G., Charman, T., Simonoff, E., Vamvakas, G., & Pickles, A. (2016). The impact of nonverbal ability on prevalence and clinical presentation of language disorder: Evidence from a population study. *Journal of Child Psychology and Psychiatry, 57*(11), 1247–1257.

- Riley, G. D. (2009). *Stuttering Severity Instrument* (4th ed.). PRO-ED.
- Roid, G. H., Miller, L. J., Pomplun, M., & Koch, C. (2013). *Leiter International Performance Scale* (3rd ed.). Stoelting.
- Roman-Lantzy, C. (2018). *Cortical visual impairment: An approach to assessment and intervention* (2nd ed.). AFB Press.
- 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).
- Wechsler, D. (2014). *Wechsler Intelligence Scale for Children* (5th ed.). Pearson.
- Wiig, E. H., Semel, E., & Secord, W. A. (2013). *Clinical Evaluation of Language Fundamentals* (5th ed.). Pearson.
- World Health Organization. (2019). *World report on vision*.
- World Health Organization. (2021). *World report on hearing*.
- World Health Organization. (2024). *Clinical descriptions and diagnostic requirements for ICD-11 mental, behavioural or neurodevelopmental disorders*.
- Yoshinaga-Itano, C., Sedey, A. L., Coulter, D. K., & Mehl, A. L. (1998). Language of early- and later-identified children with hearing loss. *Pediatrics*, 102(5), 1161–1171.

When is it sound to conclude that a student has a disability, a disorder, giftedness or twice-exceptionality, and on what grounds?

This book traces the stages of diagnosis and identification systematically, from referral and the gathering of evidence to the interpretation of that evidence and the decisions built on it. It goes beyond defining the categories and setting out their criteria to examine the nature of measurement instruments, the procedures for administering them, the qualifications required of those who administer them, the principles for interpreting their results, and the point at which the evidence is sufficient to support a judgment.

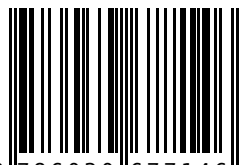
The book brings together two fields that the literature usually treats separately: disabilities and disorders, and giftedness and twice-exceptionality. It reads international standards and the American experience in light of published Saudi regulations, and describes the status of the Arabic version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

Diagnosis and Identification of Exceptional Learners

Dr. Omar A. Alsamani

ISBN 978-603-06-7714-6



9 786030 677146