An-Najah National University
Faculty of Graduate Studies

PSYCHOMETRIC PROPERTIES AND FACTORIAL STRUCTURE OF LEARNING DISABILITY SCALE WITHIN THE PALESTINIAN CONTEXT

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This Thesis was defended successfully on 17/07/2025 and approved by:

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Dedication

In the name of Allah, my Creator and Facilitator, to You belongs all praise, love, thanks and gratitude, first and last, outwardly and inwardly, for the gift of knowledge and for guiding my steps on this path.

To the one who delivered the message, performed the trust and advised the nation ... the Prophet of Mercy and the light of the worlds.

In the midst of painful events that took place in our people and our beloved Gaza, I reach my goal today, I stand to pay a merciful and honorable tribute to our righteous martyrs, may God have mercy on them.

To the one who decorated my name with the most beautiful titles, who taught me that the world is a struggle and its weapon is knowledge and knowledge, my first supporter in my journey

My support and my refuge after God ..... My father

To the one whose heart embraced me before her hands, who taught me morals before letters and facilitated my adversity with her prayers, to the tender heart .... My mother .

To my partners and silent supporters, to your hearts that embraced , and to your companionship that eased the burden of my journey, I draw strength and safety from you. .... My family

To those whose presence inspired the idea of this research, to their innocent hearts .... My little students

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To the light of science and knowledge, I walk in your footsteps, and with your knowledge we are guided, and with your determination we are guided, and with your determination we are guided. .... Honorable professors and faculty members

To everyone who helped and encouraged me in this specialization and believed in my abilities... Research Supervisor Dr. Fayez Mahameed

To everyone who had an impact on this work, even with a word, a prayer, or a smile... I ask Allah Almighty to make this work purely for His honorable face, as the road still remains, neither the journey has begun nor the road has ended.

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Lastly, to my cherished family, loyal friends, and supportive colleagues—your prayers, presence, and belief were part of every step. You each hold a place in this accomplishment.

Declaration

I, the undersigned, declare that I submitted the thesis entitled:

PSYCHOMETRIC PROPERTIES AND FACTORIAL STRUCTURE OF LEARNING DISABILITY SCALE WITHIN THE PALESTINIAN CONTEXT

I declare that the work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

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Signature:	
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PSYCHOMETRIC PROPERTIES AND FACTORIAL STRUCTURE OF LEARNING DISABILITY SCALE WITHIN THE PALESTINIAN CONTEXT

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Abstract

This study investigates the psychometric properties and factorial structure of the Learning Disabilities Evaluation Scale – Fourth Edition (LDES-4) within the Palestinian context. The scale comprises 88 items distributed across seven subscales: listening, thinking, speaking, reading, writing, mathematics, and memory. The scale was translated into Arabic and culturally adapted to ensure its suitability for use in the Palestinian educational environment. The study sample consisted of 400 individuals residing in the West Bank, selected through stratified random sampling from five educational districts: Nablus, Hebron, Qalqilya, Jenin, and Tulkarm. The scale was administered to teachers (resource room, Arabic language, and mathematics) through direct communication and professional group distribution.

The findings revealed that the LDES-4 demonstrates strong psychometric properties in the Palestinian context. Exploratory factor analysis identified four primary factors that reinforced the overall construct validity of the scale. High correlation coefficients and reliability indices were recorded, with Cronbach's alpha values ranging between 0.841 and 0.984, indicating a high degree of internal consistency and scientific validity. Moreover, no statistically significant differences were found in participants' responses based on gender, age, or geographic location, which affirms the stability of the scale across demographic groups. The subscales related to mathematics and spelling exhibited relatively higher difficulty levels compared to those of thinking and speaking.

These results underscore the reliability and validity of the LDES-4 as an effective tool for diagnosing learning disabilities, supporting its application in educational assessment and strategic planning. The study recommends the broader use of the scale for evaluating learning difficulties among Palestinian students and suggests the development of training programs for teachers and special education professionals on its administration and interpretation to ensure best practices in the identification and diagnosis of learning disabilities.

Keywords: Psychometric properties; factorial Structure; learning Disability Scale

Chapter One

Introduction and Theoretical Background

1.1 Introduction

Learning disabilities are disorders that prominently affect an individual's ability to acquire and use skills such as listening, speaking, reading, writing, logical thinking, and calculation (Muktamath, Hegde, & Chand, 2022). Although individuals with these difficulties may demonstrate an average or even above-average level of intelligence, they face significant challenges in performing essential academic tasks (Grigorenko, et al., 2020). These difficulties may arise from dysfunction in the central nervous system and can persist throughout their lives (Lyon, et al., 2021). In this context, learning disabilities present major challenges in accurate diagnosis, as these disorders typically do not manifest through clear sensory evidence or visible impairments, making them hard to identify correctly. Further complicating matters is the fact that learning disabilities may co-occur with other disabilities or may be influenced by environmental factors such as inadequate education or cultural differences, which makes diagnosis even more complicated. Therefore, identifying the true causes of these difficulties requires careful examination by professionals, and all influencing factors must be taken into account to ensure the provision of the most appropriate support and treatment for children with these disorders (Orim, Ishifundi, Edim, & Samuel, 2023).

Learning disabilities, in their diverse manifestations, have increasingly drawn the attention of researchers and experts in psychology and educational sciences. Although interest in this area arose relatively late—in the last decade of the twentieth century—compared to other fields of special education such as intellectual disabilities, sensory impairments, and severe emotional disorders, it has become a prominent topic of investigation in recent years. This change is attributed to the recognition by educators and clinicians of a subset of students who possess typical cognitive abilities and do not show obvious disabilities, attend mainstream schools, and do not face notable social, economic, or psychological issues. Nevertheless, these students encounter significant challenges in mastering fundamental academic skills essential for their educational growth. Some may struggle with reading, while others find writing or arithmetic particularly difficult (Bressane, et al., 2024).

Diagnosing learning disabilities is a critical process that requires careful evaluation. Identifying the specific type of difficulty is one of the most essential steps in this process, as labeling a child with a learning disability has profound implications for their life trajectory and future opportunities. The consequences extend beyond the individual, often creating confusion and emotional strain within the entire family. Given these significant impacts, researchers emphasize the necessity of employing a variety of diagnostic methods and ensuring the involvement of multiple specialists to achieve a comprehensive and accurate assessment (Abu Shamala & Youssef, 2020).

The topics of learning disabilities and their modern concepts are relatively recent topics in the fields of special education; previously, special education focused on studying and identifying the forms and types of other multiple disabilities, such as auditory, visual and motor disabilities, and the emergence of many forms of students who are normal in their mental, visual, auditory and motor maturity, who suffer from various forms of learning difficulties and their issues, and the seriousness of learning disabilities appears in that they are ‘hidden difficulties that are not visible, students with learning disabilities generally appear normal, but they vary in achievement level to a lesser extent (Fletcher, Lyon, Fuchs, & Barnes, 2018).

Here comes the importance of early detection and intervention, especially in the field of learning difficulties, which is the most widespread among special education categories, so that students at risk are detected by knowing the indicators of learning difficulties before their issues worsen. In order to provide the necessary services for them, and to shorten many issues, from the financial burden that falls on the community and family, and to reduce the moral burden on the child with difficulties by saving him from the consequences of repeated school failure (Hasson & Holmqvist, 2021).

In this context, there is a need to develop standardized measurement tools that are accurate and reliable to diagnose these issues and provide reliable data to help formulate appropriate intervention plans.

Teachers' assessment in such a full assessment regarding students could serve as one of the best sources of information in predicting students' learning characteristics. Not unlike other investigations, they have been successful in their predictions of learning difficulties in normal classrooms (Pazoki, Arjmandnia, Shokouhi Y, Abbas, & Moghaddam, 2023).

Among the most effective tools, LDES-4 (Learning Disabilities Evaluation Scale-4) is one of the leading scales in learning disabilities measurement worldwide. This is a comprehensive scale that encompasses some essential areas of learning- memory, attention, and language- and therefore, gives a thorough assessment of children and adolescents. However, using foreign measures without cultural adaptation implies validity and reliability problems, and therefore emphasizes the need for psychometrics study and cultural adaptation (Alanazi, 2024).

In the case of Palestine where most children face the influence of unique socioeconomic and political conditions that affect academic performance, the adaptation of the LDES-4 and psychometric analysis in the Palestinian environment becomes mandatory for proper and effective use. This study aims to verify the validity and stability of the scale by analyzing the data of a Palestinian sample and applying factor analysis to explore the conceptual structure of the scale.

This study reflects the importance of linking scientific research with the needs of the local community, as its results contribute to enhancing the accurate diagnosis of learning disabilities and developing psychological and educational measurement tools that suit the cultural specificity of the Palestinian environment.

1.2 Theoretical background

1.2.1 Learning Disabilities

Students with learning disabilities are one of the categories that cannot be neglected in our schools and need more attention and attempts to help them in various ways and methods of teaching, especially in light of the increasing global and regional interest in this category. Public schools, especially primary schools, contain many students who do not benefit appropriately from the educational and educational programmes offered to them in the classroom; this may be due to a deficit or deficiency in their achievement abilities that prevents them from learning, which results in problems in the aspects of study, achievement and follow-up of lessons, repeated failure and consequently exclusion from those schools (Krämer, Möller, & Zimmermann, 2021).

The problem of learning disabilities is not limited to the person who suffers from it directly, but its impact extends to the family, teachers and all those who care about that

individual (Al-Yagon & Margalit, 2016). Although the individual is the one who faces the issue directly and affects his psychological state and his social status, parents live in pain, anxiety and confusion, especially in countries where advanced services are not provided for such children As for teachers, they are divided into sections, including the teacher who is aware and keen on the interest of his students, and this teacher is also living in confusion because he knows that the student's underachievement is not due to his negligence and his family's negligence and that despite the efforts made, the situation remains unimproved, and there is a teacher who simply attributes the matter to negligence and enough, thus relieving his mind and getting out of his confusion (O'Byrne & Muldoon, 2019).

1.2.1.1 The Concept of Learning Disabilities

The New Jersey Joint Congress gave the meaning of learning disabilities in the year 1994 as: A heterogeneous group of disorders characterized by significant difficulties in the acquisition and use of listening, reading, writing and mathematical abilities. (Flores, 2022).

SLD is diagnosed when academic or occupational performance or daily living activities are impaired due to specific learning difficulties. These difficulties are not due to other explanations, including intellectual disability, according to DSM-5. (American Psychiatric Association, 2022).

The Learning Disabilities Association of America (LDA) has defined learning disabilities as: Chronic special disabilities of neurological origin that affect the use of verbal and non-verbal language, and these disabilities appear in individuals with moderate or high intellectual abilities, normal sensory and motor systems, and appropriate educational opportunities, and the impact of these disabilities on the individual's social life and self-concept varies according to the degree of severity of the disability (van Ingen Lauer, et al., 2022).

The learning disabilities are classified as disorders of one or more of the integrated psychological processes that alternatively are involved in comprehending or using language orally or in writing, which may be manifested in an imperfect ability to listen, think, speak, read, write, spell, or otherwise do mathematical operations. They are not due to visual disabilities, hearing disabilities, or other motor disabilities, mental retardation,

emotional disturbance, or environmental, cultural, or economic disadvantage (Petretto, et al., 2021).

The concept of learning disabilities refers to a heterogeneous group of disorders that appear in the acquisition and use of listening, speaking, reading, writing, reasoning, or arithmetic abilities. These disorders are internal in nature and are likely to be the result of central nervous system dysfunction, and may occur across different stages of life (Muktamath, Hegde, & Chand, 2022).

Learning disabilities are a dysfunction of the central nervous system that leads to impairment in the acquisition of academic skills, such as reading, writing and math, so that the child's level of academic performance is significantly lower than expected for their chronological age and intelligence level (Chokron, Kovarski, & Dutton, 2021).

Some researchers define learning disabilities as a disorder in one or more of the basic processes related to the use of written or spoken language, which may be reflected in difficulty understanding or producing speech, writing, arithmetic, memory, concentration, or motor coordination (Walters, Simkiss, Snowden, & Gray, 2022).

It is concluded that learning disabilities are a heterogeneous group of disorders that appear in the form of disabilities in the acquisition and use of language, writing, reading, and other thinking and mathematical abilities, and these disorders are caused by a malfunction in the nervous system, and can last a lifetime.

1.2.1.2 Types of learning disabilities

1. Developmental learning disabilities This type of disabilities is related to brain functions, brain processes and cognitive processes that help the child in academic achievement, and these disabilities can occur as a result of dysfunction in the central nervous system, and this type of disabilities affects the processes that precede the academic process such as attention, concentration, understanding and thinking in addition to language, and academic achievement depends heavily on these processes that form the basis of the learner's cognitive mental activity (Aro, Eklund, Eloranta, Ahonen, & Rescorla, 2022).

2. Academic Learning Disabilities: This type is due to the imbalance that occurs in the learning process and includes disabilities in one of the following skills (writing skill, reading skill, spelling skill, arithmetic skill) (Al-Hassoun, 2021).

Stevens et al. (2021) categorized learning disabilities into:

1. Reading disabilities: This is the most common type of learning disabilities, affecting 80 per cent of people with learning disabilities. The reading process is an acquired process rather than an innate process, and this process requires the ability to understand the relationship between letters and associated sounds, which is called phonetics. Dyslexia is reflected in an individual's processing of speech sounds, and includes stuttering, stuttering, changing the order of letters and slow reading.
2. Dyscalculia is characterized by disabilities in learning and understanding arithmetic operations such as turning numbers from left to right.
3. Dysgraphia is characterized by the learner's dysgraphia, such as mixing upper and lower case letters in English, disabilities writing on the line, lack of control over margins, disabilities holding the pen in the correct way, and disabilities using scissors and coloring within limits.

1.2.1.3 Criteria and Characteristics of Students with Learning Disabilities

According to (Elfakki et al., 2023; Niazov et al., 2022; Schwartz et al., 2021) the diagnosis of individuals with specific learning disorders is based on several criteria, which are as follows:

- The discrepancy criterion refers to the variation and divergence in a child's development across various psychological behaviors, such as attention and perception. It also includes disparities in general cognitive development and academic achievement in specific areas, such as reading comprehension.
- The exclusion criterion involves eliminating individuals whose academic difficulties are due to sensory impairments, such as visual or auditory disabilities. It also excludes individuals with intellectual disabilities that significantly affect their academic performance.

- The special education criterion emphasizes that children with learning disabilities cannot benefit from traditional teaching methods. Instead, they require specialized educational programs tailored to their needs.
- The neurological symptoms criterion is used to identify individuals with specific learning disorders based on symptoms resulting from mild functional brain damage. This can be assessed through electroencephalography (EEG) or by analyzing the child's medical history.

1.2.1.4 Causes of Learning Disabilities

There are many reasons that lead to learning Disabilities, and these factors are related to physiological and biological aspects, genetic and hereditary factors, as well as environmental factors. Below, we will highlight the most important factors that can contribute to learning Disabilities, which are (Salman & Asma, 2023):

1. Organic Factors: These include various causes that lead to a dysfunction in brain functions (functional impairment). They are divided into pre-natal factors—such as poor nutrition of the pregnant mother during pregnancy, maternal illnesses that affect the fetus's well-being (for example, rubella), the consumption of alcohol, drugs, certain medications, and exposure to radiation and toxic substances; factors during birth—such as prolonged labor, premature delivery, and oxygen deficiency; and post-natal factors, such as head injuries resulting from accidents and contracting diseases like meningitis and rubella.
2. Toxic Chemical Factors: Certain toxic substances cause serious chemical changes in the fetus, leading to deformities and impairments in its normal development. Among the most prominent of these toxic agents are alcohol, cocaine, and lead. Alcohol addiction results in various problems and disabilities, while cocaine use by pregnant mothers causes neural damage to the fetus, thereby increasing the likelihood of learning difficulties. Even lower levels of lead poisoning can lead to developmental and neurological issues, further elevating the risk of learning difficulties.
3. Genetic Factors: These play a major role in learning difficulties, as evidenced by scientific studies on identical twins and first-degree relatives. Learning difficulties tend to be transmitted from one generation to the next within families due to genetic influences. Several studies investigating the impact of heredity on reading and

writing difficulties have examined families with a high number of individuals experiencing such problems. The results of these studies indicate that the likelihood of learning difficulties is higher in identical twins compared to fraternal twins, which reinforces the significant role of genetic factors.

4. Environmental Factors: These include the lack of reinforcement and feedback in the child's educational environment, insufficient encouragement for achievement regardless of its size, poverty and material deprivation, poor nutrition, the absence of emotional warmth, lack of acceptance by others, negative attitudes towards the child, punitive approaches, and the attitudes of both children and their families towards school. All these factors contribute to an increased risk of brain functional impairment, thereby heightening the likelihood of developing learning difficulties.

According to Al-Tarawneh (2023), the most common causes of learning difficulties are as follows:

1. Genetic or Hereditary Causes: These causes tend to run in families. For instance, if one twin has difficulties with reading, it is highly likely that the other will experience the same problem. Thus, there is a correlation between learning difficulties and inherited genetic factors. However, the exact mechanism through which these genetic factors are passed on to children within their families remains unknown.

2. Organic and Biological Causes: This category refers to dysfunctions in brain activity that lead to impairments in mental processes such as perception, attention, concept formation, memory, and problem-solving. These impairments can disrupt academic functions like reading, writing, arithmetic, motor skills, and overall academic performance. Supporters of this view argue that numerous studies have identified neurological abnormalities in many children with learning difficulties. Advances in modern technology - such as magnetic resonance imaging and electroen-cephalography - have confirmed that brain injuries can result in a diminished ability to understand language, speech, and reading.

3. Educational Causes: Educational factors play a significant role in the emergence of learning difficulties. These include the mismatch between the educational material and the student's abilities, an overemphasis on certain skills to the neglect of others, varying teaching methods, overcrowded classrooms, inadequately prepared learning

environments, limited educational opportunities, poor teacher preparation, and social upbringing practices that may involve neglect, disregard, punishment, or favoritism among siblings.

4. Environmental Causes: Environmental factors include a lack of educational experiences, poor nutrition, inadequate medical conditions, insufficient training, forcing a child to write with a specific hand, and overall deprivation of appropriate environmental stimuli. These factors can affect an individual's learning either negatively or positively. The more conducive the surrounding environment is, the greater the potential for learning. Conversely, a poor environmental setting can lead to learning difficulties. The general environment influences a child's behavior indirectly by affecting brain development, meaning that improvements in the child's environment will support their cognitive growth.

1.2.1.5 Characteristics of Students with Learning Disabilities

Learning disabilities are characterized by their variability, as each individual with a learning disability is an independent personality, with Disabilities manifesting in one area but not in others, meaning there is no set of characteristics that apply to all children with learning disabilities. These issues include the following (Al-Sleehat, 2020):

Firstly: In the Cognitive Domain

- Disability distinguishing between essential and non-essential information in the cognitive domain.
- Impulsivity in behavior and haste without considering the consequences.
- Problems with selective attention, such as short attention spans or rapid distraction.
- Hyperactivity: Disability sitting still, constant fidgeting.
- Weak memory and inability to recall stored information.
- Disruptions in thinking, such as Disability understanding abstract concepts.
- Attributing success to external factors and avoiding personal responsibility for success or failure.
- Problems with metacognition (knowing what we know and knowing what we don't know).

Secondly: In the Linguistic Domain

- Internal language disorders: Disabilities in the language a child uses to talk to themselves, inability to transform experiences into verbal symbols, speech or listening disorders, Disability understanding and remembering spoken language, Disability with pronunciation, and challenges in oral expression using vocabulary and sentence structure.
- Receptive language disorders: such as hearing what is said but being unable to understand its meaning, inability to perceive different sounds in language, problems with the ability to choose a word from a list of words read aloud, ease in learning concrete words, Disability in learning functional words or words with multiple meanings, challenges in combining words to form phrases or sentences, and Disabilities in following instructions.
- Expressive language disorders: such as the inability to use spoken language as a means of communication, inability to recall words for automatic use, pronunciation problems, disruptions in the articulation of consonants (e.g., omitting letters, substituting or distorting letters), inability to organize thoughts, a tendency to omit words, and adding inappropriate words.
- Reading Disabilities (Dyslexia): such as the inability to visually distinguish between similar letters, inability to differentiate between sounds in words, meaning the inability to distinguish between phonetically similar words, Disability combining certain letters to form a word, and poor memory; visual memory affects remembering letters and words, while serial visual memory affects the sequence of letters in a single word and the sequence of words in a sentence.
- Auditory memory Disabilities: affecting the recall of letter sounds and subsequently blending these letters into a word; this results in letter and word reversal, weak word analysis skills, poor comprehension skills, and writing language disorders (Mohammad, 2023).

Thirdly: In the Social Domain

Students with learning disabilities may experience feelings of frustration and depression due to their academic failure, they struggle to communicate with others, are dependent, lack self-confidence, have a weak sense of self, exhibit excessive activity, and continuously fidget.

1.2.1.6 Manifestations of Learning Disabilities

The manifestations of learning Disabilities are outlined as mentioned by both (Al-Saidi, 2022; Hassan, 2022):

- Disability in writing connected letters: A number of children experience Disability coordinating the spaces between letters, with some having large spaces between letters and words at times, and very small spaces at other times. Additionally, some students struggle to remember the shapes of letters.
- Disability in writing letters: Common Disabilities in writing letters include the addition or omission of certain parts, such as adding or removing dots. Children often make mistakes in writing letters that extend below the line in the correct size.
- Disability in using spaces when writing: This is an organizational Disability where the student is unable to arrange letters and words in a consistent manner, failing to give the appropriate size to each letter and word, as well as leaving proper spacing between letters and words. This Disability is attributed to challenges in spatial perception, resulting from incorrect visual perception.
- Reading Disability in writing: This Disability is related to reading written expressions, where the writing is not cohesive in meaning. Issues also arise in expressing thoughts through writing or in using grammatical and morphological rules, or in mastering the basics of the writing process. Some students have Disability organizing and arranging their thoughts, while others find it challenging to apply writing mechanics such as punctuation marks. This Disability among students is often linked to their struggle with understanding symbols, as they experience disorders in using these symbols. Additionally, ineffective teaching methods that focus solely on precise application of grammar rules and the structure of linguistic rules contribute to these challenges.

1.2.2 The Learning Disability Evaluation Scale - Fourth Edition (LDES-4)

It is imperative for researchers and clinicians alike to have access to valid measures of their respective concepts of interest within their own cultures and languages, if they are to conduct a cross-cultural research study and/or provide clients with relevant therapeutic intervention that meets international standards (Sousa & Rojjanasrirat, 2011).

The gross adaptability of an instrument depends on several considerations, such as the level of acculturation of the individual or group, their language preference and proficiency, availability of language translations for the instrument, cultural constructs in a particular society, available norm groups, and perhaps even better possibilities for assessment that are specific to the culture (Groth-Marnat, 2009).

Many scales for the assessment of learning disabilities have been designed and put into practice in different countries all over the world for the purpose of assessing learning disabilities among children. However, the content of these scales is different from the culture of Palestine, and so, with all these foreign measures, it becomes very hard to assess learning disabilities among Palestinian children due to cultural variations. Very few scales for learning disabilities have been developed in Palestine, and their validity and internal consistency remain questionable; therefore, great urgency existed for developing a much-needed indigenous scale of learning disabilities of high validity and reliability with well-elaborated items based upon all cultural aspects of Palestinian children. This study was an attempt to develop a valid indigenous scale of learning disabilities.

LDES-4 was developed by McCarney from the year 1988 to have a norm-referenced tool for observing the students by a teacher in a regular classroom that lists the most frequent qualities of a student with specific learning disabilities. This scale examines the skills that students need to succeed in school and allows teachers to gather a valuable set of students' strengths and weaknesses through the selection of appropriate indicators (McCarney & House, Learning disability evaluation scale, 2018).

Such tools include the Learning Disability Evaluation Scale-4 (LDES-4), which transform interventions for future effectiveness and enable individualized educational planning. This tool emphasizes the core aim of identification, that is, detecting students' specific learning disabilities for the improvement of persistent academic learning problems through interventions. These make assessments broad enough to avoid wasting

time and determine what priority interventions should be given (Pazoki, Arjmandnia, Shokouhi Y, Abbas, & Moghaddam, 2023).

The Learning Disability Evaluation Scale - Fourth Edition (LDES-4) has been drawn to provide a profile based on the most popular definition of learning disabilities (IDEIA, 2004). It records the behaviors most characteristic of learning disabilities in children and youth by relying on other observers such as the classroom teacher or instructional personnel in the areas of Listening, Thinking, Speaking, Reading, Writing, Spelling, and Mathematical Calculations. Because of this, the LDES-4 is especially suited for initial referral and screening procedures in which decisions may be made regarding more thorough educational assessments.

(lDES-4) constitutes an update of norms for the Learning Disability Evaluation Scale - Renormed Second Edition (LDES-R2) (McCarney & Arthaud, Learning disability evaluation scale - Fourth Edition (LDES-4), 2007). The LDES-4 addresses almost all the commonly observed characteristics of learning disabled students, based on the federal definition of learning disabilities (IDEIA, 2004) and the subscales (Listening, Thinking, Speaking, Reading, Writing, Spelling, and Mathematical Calculations), which correspond to seven areas of disability defined in the federal definition.

The LDES-4 uses frequency-referenced quantifiers. Each item of the LDES-4 is rated on a four-point scale (Not Developmentally Appropriate for Age, Rarely or Never, Inconsistently, Consistently). After the completion of ratings, five types of age, as well as grade scores, may be derived: frequency rating for each item.

Looking back on the difficulty of behavior (reflecting the degree of difficulty in performing a behavior), the raw score of that subscale (summing that of frequency ratings of each subscale) is its own standard score (which can allow for comparison of students), a learning quotient, and a percentile. The subscale standard scores are drawn on the graph at the bottom of the Profile Sheet, providing a good visual representation of skills.

The LDES-4 test takes about 20 minutes to accomplish and can be administered by anyone who knows the student: the classroom teacher, clinical personnel, or other school staff. The complete LDES-4 kit contains Pre-Referral Learning Problem Checklists,

Documentation Forms for Intervention Strategies, a technical manual, rating forms, a Learning Disability Intervention Manual, and a Parent's Guide to Learning Disabilities.

The Learning Disability Evaluation Scale - Fourth Edition (LDES-4), highlighting its purpose in offering a profile aligned with the widely accepted definition of learning disabilities (IDEIA, 2004). Emphasizing observations from teachers or instructional staff, the LDES-4 documents key behaviors associated with learning disabilities in areas such as Listening, Thinking, Speaking, Reading, Writing, Spelling, and Mathematical Calculations. This particular focus indicates that the tool is well positioned to be a first referral and screen for making decisions on more in-depth educational evaluation.

The study will focus on three priority areas: First, the study of construct validity to test whether the scale measures the relevant dimensions of learning disabilities as defined within the Palestinian context. Second, stability testing includes consistency of results over time and under varied conditions. Finally, the factor structure of the scale will be investigated to determine whether the identified factors correspond to the core concepts of learning disabilities within the Palestinian context.

Validation of the scale for assessing learning disabilities in a Palestinian context is important for at least three reasons: Cultural adaptation: More culturally specific and linguistically adaptable to Palestinian contexts. Validity of assessment: The scale will be validated and will prove effective for the Palestinian context. Guidance support: Standardization will help in providing better guidance to students with learning disabilities in this context so that their needs are addressed, It also helps to develop a comprehensive approach to assessing learning disabilities that takes into account the cultural and social specificities in Palestine. It provides a uniform standard for comparison, which helps assess national trends and make informed decisions based on standardized results.

In summary, it has an effective role in enhancing the effectiveness and suitability of assessment tools in the Palestinian educational environment. Therefore, this research will investigate whether the learning disability evaluation scale fourth edition (lDES-4), in its Arabic version, that assess the most commonly identified characteristics of learning disabled students, can be employed to measure in the Palestinian context.

There have been few Arab studies similar to this study that are concerned with measuring psychometric characteristics.

Psychometric properties and the construction of scales to help diagnose learning disabilities, including:

Al-Zayyat (2004) study aimed to legalize the Michael-Best Learning Disabilities Scale on the Egyptian environment for a sample ranging from (8) - (18) years old, half of them are females and the other half are males, to test the validity of the terminal comparison at a significance level (0.01), and the results indicated the gradation of the groups with significance levels between (0.01 - 0.05). As for stability, it ranged between (0.85) - 0.90) The values of the internal consistency coefficients by Kuder and Richardson's equation ranged between (0.87 - 0.90) (Almontaser, 2023).

1.2.3 Related studies

Bazuki, Al-Masri & Al-Qudah (2023) aimed to codify a descriptive diagnostic scale for learning disabilities (LDES-4) to improve the quality of learning in students with learning disabilities. The sample consisted of 596 students from second to fifth grade selected by simple and purposive random sampling methods, as well as 27 students with specific learning disabilities selected by the available sample method. The assessment used the Colorado Learning Disabilities Questionnaire for concurrent validity and relied on exploratory factor analysis, structural equations modeling, multiple linear regression, and t-test. The study found a five-factor structure which is theoretically consistent with the scale itself, and the correlation coefficient for CLDQ was 0.65, indicating an acceptable level of convergent validity. The internal consistency coefficients ranged from 0.97 to 0.99, indicating extremely high temporal stability of the scale. Therefore, the scale is found to be valid and reliable for diagnosing learning disabilities.

Kalkovand & Hassan (2022) have examined the phonological processing paradigm in children with dyslexia and dyscalculia to established whether it is a common factor or a separate component of the two disorders. In the study, 30 primary school students were involved, which included dyslexics, dyscalculics, and normal children in equal measure. The authors employed the LDES-4 scale and even IQ tests to assess phonological short-term memory, rapid naming, and phonological awareness. Analyses of the results indicated that the groups of dyslexics would show phonological awareness that was

similar between themselves but different from the normal group, while there were no significant differences for phonological short-term memory and rapid naming. Thus, the study concluded that phonological awareness might be considered a common factor of the disorders under study, pointing out the fact that diagnostic tools must improve in sensitivity to understanding the cognitive differences between the two disorders even better.

The study by Salik et al. (2022) attempted to highlight the psychosocial issues faced by adolescents suffering from Specific Learning Disorder (SLD). The sample comprised 50 SLD males and females between 11 and 17 years of age purposively identified from five mainstream schools located in Islamabad. The study assessed psychosocial disabilities by employing the Learning Disabilities Evaluation Scale (LDES) and the Strengths and Difficulties Questionnaire (SDQ). The findings revealed that dyslexia was the highest form of SLD found, with SLD psychosocial problems higher among males than in females who suffered from social and behavioral problems. The study concluded that adolescents with SLD face internal problems such as low self-esteem and external problems arising from difficulties in establishing friendships and engaging in anti-social behavior. The study recommended implementing inclusive education and therapeutic interventions for these children.

Barhoun, Coolidge, Alizadeh, Parhoon, & Srivastava (2024) tested a cognitive rehabilitation programme (CRT) for effect on executive functions, problem solving, and attention in students with Specific Learning Disorder (SLD). A sample of 42 students aged between 8 and 12 years, third to sixth grade, were randomly assigned to participate in an experimental group receiving 16 sessions of the programme (21 students), and a control group (21 students). Executive functions were assessed using the Executive Behaviour Rating Scale; problem solving was administered through the Tower of London Test; attention using Stroop Test. The most aspects showed a highly significant improvement in favor of the experimental group, and this improvement was maintained after two months of follow-up. It was concluded that the CRT may enhance cognitive performance and is thus warranted for further consideration of a treatment approach in children with specific learning disorder.

The research of Kanwal et al. (2023), concerned the academic achievement of students with learning disabilities in contrast to those peers in a co-learning environment. It also examined how cooperative teaching was effective in realizing the holistic development of these children. The study was experimental and constituted two groups - Students with learning disabilities and students without learning disabilities within an inclusive setting, supported through the work of a specialist teacher. The academic performance of the two groups was compared over 40 days for English. The students of the experimental group - with or without learning disabilities - were also able to acquire greater learning achievement compared to the control group, thus proving that collaborative teaching in an inclusive environment is an effective way to support students having learning disabilities. In addition, it recommended developing such an environment by the family to enhance educational curriculum relevant to the needs of inclusive education.

The study developed by Habib et al. (2024) was targeting the evaluation of the influence of the Response to Intervention (RTI) strategy on learning disabilities among primary and secondary school students. The study was carried out on the sample population of 320 students, aged 8-14 years, an experimental design with pre- and post-test methodology used to assess reading, writing, and spelling. The three-tier RTI strategy was instituted for the amelioration of learning disabilities, with students' skills judged with curriculum-based measures (CBM), and the outcomes suggested that RTI considerably enhanced students' oral, writing, and spelling skills. There was a statistically significant effect with $P<0.01$ where student performance was improved after the three interventions.

Employing an ABA individual case design, Tazesh et al. (2023) conducted a preliminary investigation into the effects of teaching heuristics to students with reading disabilities. Six students were selected from the total cohort referred to the Learning Disorders Centre according to their results on the Wechsler Scale of Intelligence Tests for Children-4th edition and the Learning Disabilities Evaluation Scale-4th edition (LDES-4th edition) and the inclusion or exclusion criteria. The educational treatment was comprised of 23 sessions, and visual analyses, non-overlapping indicator coefficients, and effect sizes indicated that participants' reading comprehension demonstrated a significant increase over baseline assessment, whereas the return phase demonstrated a significant decrease when measured against the intervention phase. Findings suggest that the educational use

of heuristics may offer promising avenues for consideration in the treatment of learning disabilities.

The goal of the research carried out by Pazaki et al (2023) was to standardise the Learning Disabilities Evaluation Scale (LDES-4), which is a diagnostic-descriptive tool. The sample included second to fifth graders of the academic year 1400-1401, in which 596 students were selected purely by simple random sampling or purposive sampling methods for the normative sample. On the other hand, there were 27 students with learning disabilities who were included in the clinical sample via the available sample method. The possible evidence for concurrent validity was derived from the Colorado Learning Disabilities Questionnaire (CLDQ). The data were analyzed using exploratory factor analysis, structural modeling, multiple linear regression, and an independent t-test. The results showed a five-factor structurer based on both factor analysis and rotation axis methods, and the agreement of those results with the theoretical structure of the scale was quite good; in fact, it showed a strong positive correlation with the CLDQ, as well as significant differences between normative and clinical groups ($p<0.001$). The internal consistency coefficient and temporal reliability were very high, and thus, the Persian version of the scale is an instrument valid and reliable for diagnosis of learning disabilities among students in the second to fifth grade.

The study by Barrowcliff, et al. (2018) aimed to examine the psychometric properties of the CORE-LD30 scale used to assess psychiatric disorders in people with intellectual disabilities in clinical practice. The sample included 271 patients referred to three national health services that provide psychological support to people with intellectual disabilities. The principal component analysis with oblique rotation was used in the study to check for the convergent validity of the extracted dimensions. The study found great internal consistency for the entire scale ($\alpha = 0.92$) supported by three dimensions: Problems/Symptoms, Risks to Self, and Risks to Others. Strong intercorrelational validity was found between the dimensions and other scales. The study suggests that the CORE-LD30 is used in both research and clinical settings as a thorough measure of psychiatric disorders in people with intellectual disabilities.

Al-Shadeefat (2017) study aimed to reveal the prevalence of learning disabilities and their symptoms among female students of the first intermediate grade in general education

schools for girls in the city of Makkah, using the Learning Disabilities Evaluation Scale (LDES-R2), and the study sample consisted of (235) female students, the study data was collected using the Learning Disabilities Evaluation Scale (LDES- R2) after checking the reliability and stability coefficients of the two scales, and the students' grades in Arabic language and mathematics, and the results of the study showed that the Learning Disabilities Evaluation Scale was able to distinguish between the members of the sample, by highlighting the weaknesses that they suffer from clearly, as the prevalence of learning disabilities among members of the study community was large in all seven areas of the Learning Disabilities Evaluation Scale.

Sorola's (2009) study aimed to examine whether the Greek translation of the Learning Disabilities Evaluation Scale (LDES) could be used to recognise learning disabilities. The scale was filled out by 165 teachers of students aged between 5 and 14 years old. The results of the study showed a significant correlation between students' scores in maths, Greek language and reading ability test, and that scores on the LDES scale were significantly different between a sample of 47 students with learning disabilities and another random sample. Exploratory analyses showed that the scale maintained the original factor structure and supported values for reliability and internal consistency.

Al-Muntasir (2023) conducted a study aimed at examining the confirmatory factor validity of the Academic Learning Disabilities Scale among elementary school students in the Republic of Yemen, specifically for grades (1–6), covering the age range of (5–12) years. A sample of (450) elementary school children from grades (1–6) was selected from eight schools in the capital city, Sana'a, for testing the validity and reliability of the model proposed in the study using AMOS software. This Academic Learning Disabilities Scale was administered by classroom teachers along with a trained observational team specifically trained to identify learning disabilities among students. The confirmatory factor analysis revealed a very good fit to the theoretical framework of the scale and thereby confirmed the validity of its five original factors on the basis of several fit indices. Marked evidence confirming its high validity and reliability has also been shown by this study: composite reliability (CR) and confirmatory construct validity throughout its five-dimensionality. It also confirms the scale's appropriateness to assess academic learning disabilities for elementary school students and its validity for research studies carried out in this arena.

Al-Rubayan and Al-Mutairi (2022) sought to assess the achievement of students with learning disabilities compared to their general education counterparts on the General Aptitude Test. The sample comprised 176 students, including 85 identified as having learning disabilities and 91 from general education secondary pupils in Riyadh who have learning disability programs. The researchers adopted the comparative descriptive approach for this study and employed two questionnaires for data collection, one aimed at students with learning disabilities and the other at students in general education. Some of the major conclusions of this study include several findings. It was first found that there exist statistically significant differences between the hypothetical mean scores and the actual mean scores of students with learning disabilities on the General Aptitude Test where actual mean score was favored. It has also been found to be statistically significant that there was a difference in performance from students with learning disabilities and general education pupils on the test, where general education pupils outperformed, with a moderate effect size. Furthermore, this study found a statistically significant difference in the performance of students with learning disabilities based on the subject in which they encountered difficulty and their cumulative high school GPA. Performance evaluation showed no significant differences among students with learning disabilities according to gender, category of learning disability in that test, or enrollment in learning disabilities classes.

Al-Hubaishi (2022) aimed to validate the Diagnostic Test for Learning Disabilities (DTLD) for use among elementary school students in Yemen, specifically testing its face validity through construct-related analysis, and criteria validity. An analysis of reliability determined the value of these coefficients through the Cronbach's alpha method. Furthermore, the research also intended to set up standards for the interpretation of DTLD scores. The results illustrated that the DTLD has a face validity good enough according to expert evaluations and strong construct based on internal consistency and discriminant validity and good in criterion-related validity with correlation coefficients between achievement scores from (0.35–0.59) across various test areas. Regarding reliability, the overall test Cronbach's alpha coefficient was 0.84, while subscale reliabilities ranged between 0.69 and 0.83. This finding indicated a strong internal consistency.

The study by Tannock (2014) aimed to identify the most significant changes made to the diagnostic criteria for individuals with learning disabilities in the fifth edition of the

Diagnostic and Statistical Manual of Mental Disorders (DSM-5). These changes were categorized into two main aspects, each requiring further modifications. The first change involved a broad classification of individuals with learning disabilities, accompanied by criteria for describing specific manifestations of learning disorders at the time of assessment across three key domains: reading, writing, and mathematics. The second major change was the elimination of the discrepancy criterion in assessing intelligence achievement and its replacement with four criteria (A, B, C, D), all of which must be met. Criterion A defines the core characteristics of individuals with learning disabilities, requiring at least one symptom of a learning disorder to persist for at least six months despite receiving additional support or targeted instruction. Criterion B measures these characteristics, indicating that the affected academic skills are significantly and measurably below expectations, causing impairments in academic, professional, or daily activities, as confirmed through individually administered standardized achievement tests and comprehensive clinical evaluation. Criterion C determines the age of onset, stating that disabilities must emerge during school years, although they may not become fully apparent until adulthood in some individuals. Lastly, Criterion D identifies potential disorders that must be ruled out, including intellectual disabilities, hearing or vision problems, and mental or neurological disorders.

The aim of Deniz (2022) study was to develop a screening scale for Specific Learning Disabilities (SLD) in primary school children aged 8-11 years (grades 2-4). The scale was administered to 401 teachers, including classroom and special education teachers, in Turkey during the 2019-2020 academic year. Exploratory and confirmatory factor analyses were performed, revealing that the scale consists of 7 factors and 39 items, explaining 73.224% of the total variance. The seven factors identified include: writing process, communication skills, literacy skills, responsibility-taking skills, attention skills, arithmetic skills, and number recognition. Confirmatory factor analysis showed good fit indices with RMSEA (0.063) and CFI (0.951). The internal consistency coefficient for the scale was 0.963, indicating high reliability. The scale is valid and reliable and can be effectively used by teachers and researchers to screen students for Specific Learning Disabilities in primary school grades 2-4.

Khanipour et al. (2025) sought to examine the psychometric properties of the "Process Assessment of the Learner (Second Edition): Diagnostics for Math" (PAL-II M), a

diagnostic instrument for Math Learning Disability (MLD) consisting of 14 subtests for the evaluation of math-related skills. The assessment tools comprised of the PAL-II M and the Learning Disability Evaluation Scale (LDES), while the study population consisted of 404 primary school students from Tehran and the 95 diagnosed as having MLD. All subtests were reliable with the exception of Fingerprint Writing. Results also suggested that a three-factor model fit the data best, different from the original two-factor structure proposed for the test. Very significant PAL-II M score differences emerged between both groups (MLD vs. Non MLD). Most striking was the difference made by the quantitative and spatial working memory. The study concluded that the PAL-II M has strong psychometric properties and a coherent factor structure across Iranian students. PAL-II M subscales were better categorized along particular neuropsychological functions e.g. calculation, visual spatial processing, and numerical processin.

The researchers Pazoki and coauthors equipped their abilitvies with the unknown function of establishing and standardizing the Learning Disability Evaluation Scale (LDES-4) as a localized teacher-centric diagnostic tool for specific learning disabilities (SLD), valid and reliable. The study sample comprised 2nd to 5th graders standardizing the 1400-1401 academic year. For the normative sample, 596 students were chosen through the simple random and purposive sampling techniques while the clinical sample comprised 27 students diagnosed with SLD, selected by available sampling techniques. The concurrent validity was taken using the Colorado Learning Difficulties Questionnaire (CLDQ). Data analyses were performed through Exploratory Factor Analysis, Structural Equation Modeling, Multiple Linear Regression, and Independent T-Test. Results revealed a five-factor structure emerged from Principal Axis Factoring and Promax rotation methods that are closely aligned with the theoretical structure of the scale. The correlation between the full-scale scores of the current scale and that of CLDQ was 0.65, indicating acceptable concurrent validity, along with a significant difference between the normative group and clinical groups ($p < 0.001$). Internal consistency coefficients ranged from 0.97 to 0.99. Intraclass Correlation Coefficients (ICC) ranged from 0.88 to 0.97, indicating the temporal stability of the scale.

1.2.4 Research Gap of the Current Study

Although there have been many prior studies that investigated the LDES-4 from different perspectives, there remain research gaps that were not convincingly dealt with, warranting the need for the present study. Pazaki et al. (2023) standardized the scale in non-Arabic settings such as the Persian context, looking at its factor structure and establishing its validity and reliability. On the contrary, the study of Kalkovand & Hassan (2022) dealt with the relationship between learning disabilities and phonological processing disorders, but the factor structure of the scale was not the focus of being examined as an independent diagnostic tool. Likewise, the study of Salik et al. (2022) investigated the psychological and social problems of adolescents with learning disabilities without exploring the psychometric properties of the scale and performing factor analysis.

As for previous studies, the one conducted by (Barhoun, Coolidge, Alizadeh, Parhoon, & Srivastava (2024) evaluated the effectiveness of a cognitive rehabilitation program in improving executive functions in students with learning disabilities. In contrast, Kanwal et al.'s (2023) study examined how effective cooperation learning was in improving academic achievement in these students while Habib et al. (2024) studied how RTI improved reading and writing skills among students with learning disabilities. The impact of educational strategies on reading comprehension was studied by Tazesh et al. (2023), but the factor structure of the scale as well as its validity across cultural contexts was not addressed therein. Finally, the authors have, as an e.g., Baroclef, Oathamshaw & Evans (2018) study that specifically focused on the psychometric properties of the CORE-LD30 while measuring psychological disorders in patients with intellectual disabilities rather than learning disabilities. Mapped the prevalence of learning disabilities among female students in Mecca using an earlier version of the scale (LDES-R2) but did not analyze the factor structure. As well as Sorola's (2009) study, which examines the Greek translation of the scale and tests its validity, there is no comparative factor analysis for evidence across cultures.

With this context, the current study fills a major research gap by examining the factorial structure and psychometric properties of the LDES-4 in the context of Palestine, as well as verifying whether it is a valid diagnostic instrument and analysing demographic

differences in learning disabilities - all contributing toward an evidence base for providing a standardization and justification for further use within the Palestinian educational setting as a reliable tool for measuring learning disabilities.

1.2.5 Problem statements

The diagnosis of learning disabilities is one of the major challenges facing the educational system in any society, as it directly affects the academic achievement and psychosocial adjustment of students with these difficulties. Students with learning disabilities constitute a heterogeneous group, suffering from various issues in reading, writing, mathematics, listening, and thinking, making it an urgent need to develop accurate tools that contribute to their assessment objectively and effectively.

In the Palestinian context, students with learning disabilities face complex challenges in which academic and social factors overlap with environmental and cultural conditions, which increases the importance of having measurement tools that have a high degree of reliability and stability and reflect the cultural and educational characteristics of this environment. Hence the need to study the psychometric properties and factor structure of the Learning Disabilities Diagnostic Scale (LDES-4) to ensure its suitability and effective use in this context.

In addition, Salik et al. (2022) explained the psychosocial effects of learning disabilities, showing that males are more prone to behavioral and social issues than females, which necessitates the use of measurement tools that take into account the psychosocial dimensions of learning disabilities, while (Barhoun, Coolidge, Alizadeh, Parhoon, & Srivastava (2024) focused on the effectiveness of cognitive rehabilitation programmes in improving executive functioning, problem solving and attention in children with learning disabilities, hence the importance of early and accurate diagnosis using standardized tools.

Pazaki et al. (2023) codified the LDES-4 scale as a descriptive tool for the diagnosis of learning disabilities. The results of the factor analysis showed consistency with the theoretical structure of the scale, and confirmed its stability and validity, making it a reliable tool for diagnosis, which is confirmed by (Al-Muntasir, 2023) by testing the confirmatory factor validity of the Academic Learning Difficulties Scale for students, and confirmed the validity of the scale in assessing this age group.

Despite the research efforts exerted in legalizing and developing tools to measure learning disabilities, there is a clear research gap in the absence of studies that adequately address the psychometric properties and factor structure of the LDES-4 scale in the Palestinian environment, which makes its use without local adaptation may lead to inaccurate results. Therefore, the current study aims to fill this gap by assessing the psychometric properties of the scale and verifying its compatibility with the Palestinian environment, which contributes to providing a reliable tool to assist teachers and special education specialists in diagnosing students with learning disabilities objectively and efficiently:

Main question: What are the psychometric properties and factor structure of the Learning Disabilities Scale in the Palestinian context?

The main question has a number of sub-questions as follows:

- What is the Factor Structure of the LDES-4 scale when applied to a sample of learners with learning disabilities?
- How effective are the psychometric properties of the Learning Disabilities Diagnostic Scale 4 (LDES-4) in light of the Palestinian environment?
- Are there statistically significant differences in the level of learning disabilities attributable to demographic variables (such as age, gender, place of residence) among the individuals included in the study?

1.2.6 Aim of the study

- To determine the factor structure of the LDES-4 scale when applied to a sample of learners with learning disabilities.
- To evaluate the effectiveness of the psychometric properties of the Learning Disabilities Diagnostic Scale 4 (LDES-4) in the context of the Palestinian environment.
- To examine whether there are statistically significant differences in the level of learning disabilities based on demographic variables (such as age, gender, and place of residence) among the individuals included in the study

1.2.7 Significance of the study

This study acquires great importance by addressing a vital topic related to the diagnosis of learning difficulties in the Palestinian environment, as it seeks to provide a qualitative addition in the field of psychological and educational measurement by examining the psychometric properties and factor structure of the LDES-4 scale, and the importance of this study is highlighted by the following:

Theoretical relevance

The study seeks to enrich the scientific literature on learning disabilities, as this study is a qualitative addition to scientific research on learning disabilities, especially in non-Western environments, as it fills a research gap related to the appropriateness of diagnostic tools used globally for the Palestinian context, and thus the study contributes to providing an accurate analysis of the reliability and validity of this scale, which allows researchers and specialists in the field of psychometrics to provide reliable data on its effectiveness. An accurate analysis of the reliability and validity of this scale, providing researchers and specialists in the field of psychometrics with reliable data about its effectiveness. Examining the scale's factor structure allows for a deeper understanding of the theoretical construct of learning disabilities and helps determine whether the dimensions it measures are in line with the cultural and educational specificities in Palestine.

Applied relevance

Through the current study, the researcher seeks to improve the accuracy of diagnosing learning difficulties in Palestine by testing the psychometric properties of the LDES-4 scale, and thus the study helps to provide a reliable tool that can be used by teachers and special education specialists to identify students with learning difficulties more accurately, and thus the researcher hopes to provide a codified tool suitable for the Palestinian environment, which contributes to reducing the possibilities of misdiagnosis or inaccurate diagnosis, thus improving the quality of services provided to students with learning difficulties, and the study results would provide scientific data to help educational decision makers in improving diagnostic tools.

By providing a measurement tool that possesses accurate psychometric criteria, specialists in the fields of psychology and special education will benefit from the results

of the study to develop more accurate and effective treatment and counselling plans. Therefore, the importance of this study is not limited to developing a diagnostic tool for learning disabilities, but extends to having a wide positive impact on the educational system by improving diagnostic mechanisms, enhancing the effectiveness of educational interventions, and supporting educational policies based on reliable scientific data.

The Palestinian context

It's high time to develop a necessary scale for the Palestinian context by diagnosing learning disabilities in view of the specificities of challenges faced by Palestinian students in an educational process where social, economic, and political factors guarantee a direct impact on the educational environment, thus requiring measurement tools that possess high validity and stability and reflect the cultural and educational characteristics of this environment. The great concern of previous literature is the development of tools that can accurately diagnose individuals with learning disabilities (Bazuki, Al-Masri, & Al-Qudah, 2023).

The initial and correct diagnosis through standardized tools is the first step in the improvement of effective strategies for intervention (Barhoun, Coolidge, Alizadeh, Parhoon, & Srivastava, 2024), resulting in the need for a learning disability measurement adapted for the Palestinian environment to weigh the disabilities accurately and comprehensively.

It signifies the importance of carrying out studies similar to these to test the efficiency of the scale in the Palestinian context and verify its adaptability to the cultural and linguistic characteristics of Palestinian students. Therefore, it is a scientific and practical necessity to develop a measurement to suit the Palestinian environment for an accurate diagnosis of learning disabilities as it helps improve the educational outcomes for students with learning disabilities and allows teachers and special education specialists to offer appropriate support to them, based on reliable scientific foundations.

Importance of Psychometric Analysis

Psychometric analysis aims to verify the properties of measurement tools, including reliability and validity. By analyzing the data, it can be determined whether the instrument accurately measures what it aims to (construct validity) and whether the results are

repeatable in different conditions (stability). In addition, factor analysis helps reveal the underlying dimensions of the measure, contributing to a deeper understanding of the conceptual structure of learning disabilities (Kaplan & Saccuzzo, 2017).

1.2.8 Determinants

Temporal determinants

This study was conducted during the academic year 2024. The field data collection process took five months, from September 2024 to January 2025, to ensure comprehensive coverage of the target population and accurate analysis .

Spatial determinants

The study was limited to public and private schools in the West Bank governorates, which include Palestinian cities and villages that represent socially and culturally diverse environments. The schools were carefully selected to ensure a good representation of different regions, including urban and rural areas and camps, which enhances the generalizability of the study's findings to the Palestinian context.

Human Determinants

The target sample included students (from second to eleventh grade) aged between 8-16 years old. Students with academic learning disabilities were selected according to teachers' reports and initial diagnostic criteria. The study also included teachers and psychologists working in schools who contributed to providing information and observations related to students' academic performance, which supports the accuracy of diagnosing and testing the characteristics of the scale.

1.2.9 Concepts of the study

1. **Learning disabilities**

   Learning disabilities are defined as developmental disorders that affect basic Zpsychological processes related to comprehension or use of spoken or written language, negatively affecting the ability to read, write, or perform mathematical operations. These difficulties are not due to an intellectual or sensory impairment, but are related to a malfunction in the brain processes required for learning tasks,

making students who suffer from them require special educational strategies that meet their individual needs (American Psychiatric Association, 2022).

Operational Definition of Learning Disabilities: students with learning disabilities face academic challenges that necessitate the use of specialized educational strategies tailored to meet their individual needs, which is examined through the Learning Disabilities Scale in this study.

2. Scale

Al-Nimr (2018) defines a scale as: A set of stimuli designed to measure in a quantitative or descriptive way some psychological traits or characteristics. Cronbach's Al-Nimr (2018) states that a scale is a structured way to compare the behavior of one or more individuals at different periods of time (Al-Qadi, Mahameed, & Abu Joudeh, 2022).

Operational Definition of Scale: the scale used in this study is specifically designed to assess learning disabilities among Palestinian students, providing a reliable and standardized method to evaluate these traits within the Palestinian educational system. The scale is employed to identify students with learning disabilities and support interventions by accurately measuring their academic and psychological needs.

3. LDES4

Learning Disabilities Evaluation Scale - Fourth Edition (LDES-4): is a measurement tool developed to identify and diagnose learning disabilities in children and adolescents. The scale consists of 88 items divided into seven subscales, namely: Listening, Thinking, Speaking, Speech, Reading, Writing, Math, and Memory. The scale assesses academic performance and basic skills that reflect the challenges faced by individuals with learning disabilities. The LDES-4 is a standardized psychometric instrument with high reliability and validity and is widely used in educational and counseling contexts to provide appropriate support for students with learning disabilities (McCarney & Arthaud, Learning disabilities evaluation scale–Fourth Edition (LDES-4), 2013).

Operational Definition of Learning Disabilities Evaluation Scale - Fourth Edition (LDES-4): The LDES-4 scale is used as a reliable and validated tool for diagnosing

learning disabilities in Palestinian students in schools. It helps identify students' educational and psychological needs, providing accurate information to support decisions regarding tailored educational strategies and interventions. This scale is a standardized psychometric instrument, which enhances its effectiveness in educational and counseling contexts within the Palestinian environment

4. Psychometric properties

Psychometric properties: Bousalem (2017) defines them as those necessary qualities related to the effectiveness of the test items, as well as honesty and stability, and their associated coefficients of discrimination, levels of ease and difficulty in the case of achievement and ability tests, and criteria for interpreting the results, which are verified after applying the test empirically on a representative sample of the community called the standardization sample, and the quality and objectivity of the test depends on the availability of appropriate degrees of these characteristics." Procedurally, it is the level of honesty and stability that the scale enjoys (Rasras, 2024).

Operational Definition of Psychometric Properties: The psychometric properties of the Learning Disabilities Evaluation Scale - Fourth Edition (LDES-4) are critical for ensuring that the scale is effective in identifying learning disabilities among Palestinian students. The scale's validity and reliability are verified through empirical studies conducted within Palestinian schools.

5. Factor Structure

Factor structure is a statistical analysis used to understand the relationships between the variables of an instrument and identify the dimensions or underlying factors that explain the variance of the data. This analysis helps assess the validity of the instrument and redefine its dimensions based on the results (Tabachnick & Fidell, 2019).

Operational Definition of Factor Structure: Factor structure analysis of the Learning Disabilities Evaluation Scale - Fourth Edition (LDES-4) is applied to understand how different factors such as listening, thinking, reading, writing, and math contribute to identifying learning disabilities among Palestinian students. Through this analysis, the dimensions that represent the actual challenges faced by Palestinian students in their learning are identified. This allows for the adaptation of the scale to better fit the Palestinian context.

Chapter Two

Research Methodes

2.1 Introduction

This chapter introduces the research data collection process used in this study, and discusses the population, sample, and research tool design. Moreover, the researcher introduces validity, reliability, and statistical analysis methods.

The researcher utilized a descriptive analytical approach which focus on collect the information about the psychometric properties and factorial structure of learning disability scale within the Palestinian context, and describe the psychometric properties of the Learning Disabilities Diagnostic Scale 4 (LDES-4) in light of the Palestinian environment, so the descriptive methodology is the perfect one.

2.2 Data Collection Tools

It consisted of two classes of data basic to the research;(primary and secondary data):

1. Primary Data: The primary data here were sourced directly from the LDES-4 scale, which deals with the psychometric properties and factor structure of the scale specific to learning disabilities in Palestine. The scale was distributed, and data collected were analyzed through statistical analysis using SPSS Amos computer software.
2. Secondary Data: Ten includes this site along with many other books, journals, reports, websites, and so many more materials available and relevant to the research issue and used to present the research's connected study. Literature reviewed was introduced to prepare the study and categorize its objectives while detailed procedures were imparted for measuring latent meaning.

2.3 Sampling Technique

Researchers are curious about the process they use to select research samples, so it's critical to choose techniques that are appropriate for the goals of the study before defining the research community and sample size. A particular kind of non-probability sampling technique called convenience sampling collects data from population members who are conveniently accessible to take part in the research. Due to the impossibility of forced involvement in the current research, this approach represents the only ethical paradigm.

The non-experimental research methodology examines the correlation between the results on the two test domains using a practical population.

2.4 Research Population

The population for this study was carefully defined to ensure an accurate representation of students with learning disabilities in the context of the Palestinian educational environment. The sample was selected from five school districts: Nablus, Hebron, Qalqilya, Jenin, and Tulkarem. These areas represent geographical diversity that ensures the inclusiveness of the results in different social and educational contexts.

400 students were selected from a variety of schools in these areas by using very strict criteria relating to the diagnosis of learning disabilities. They will have undergone a diagnosis either by special education specialists or on the basis of medical reports clearly indicating the presence of specific learning difficulties like reading disability, writing disability, and math disability.

The study was keen to take into account students of different ages and stages of education - from 7 to 18 years - so as to have a complete representation of primary and secondary school students facing learning challenges requiring accurate diagnosis. The gender mix in sampling was also maintained since both male and female students were evenly represented in the study.

This sample will be the most appropriate with regard to factor analysis and psychometric properties assessment of the scale given its socioeconomic diversity as well as its geographical diversity that cuts across both urban and rural settings. Stratified random sampling was used to ensure an accurate representation of all categories of learning disabilities. Obtaining written consent from parents to take part was strictly adhered to in terms of ethical procedures with a focus on the privacy of each participant and confidentiality of the data.

2.5 Research Sample

A careful selection of the study sample was made to promote inclusivity and diverse representation in order to reflect the real-life scenario of children and adolescents with learning disabilities. This sample included children and adolescents between the ages of 6 and 18, from different educational levels, ranging from primary to secondary education.

The socio-economic diversity of the participants was also ensured by including schools and educational centers in urban areas and rural areas.

A multi-stage sampling method was employed so as to ensure the validity and reliability of the study. Initially, schools and educational centers concerning learning disabilities were contacted, whereby the teachers and psychological counselors in these centers conducted preliminary screening to identify students with significant academic difficulties, thus suspected of having learning disabilities.

Then 400 students were selected using stratified random sampling, whereby the sample was categorized based upon age and gender to ensure balance and adequate representation. The sample included students with a range of types of learning disabilities such as dyslexia, dysgraphia, dyscalculia, and others associated with non-specific learning disabilities.

The criteria for selecting participants included being free of any sensory impairments or neurological disorders that might affect the final results of the study. Formal parental consent was obtained, as well as the consent of the children themselves after explaining the objectives of the study to them

Thanks to this systematic method of sample selection, we were able to obtain an integrated group that represents the actual reality of children with learning disabilities, which ensures the accuracy of the results and contributes to the evaluation of the psychometric properties and factor structure of the Learning Disabilities Diagnostic Scale (LDES-4) objectively and realistically.

2.6 Instrumentation

In the standard procedure of survey research for psychometric properties and factorial structure of learning disability scale, a self-report questionnaire was presented to participants. The LDES-4 designed to assess the level and nature of learning disability in children and adolescents between the ages of 8 and 16 years old (from second to eleventh grade). Students with academic learning disabilities were selected according to teachers' reports and initial diagnostic criteria. The study also included teachers and psychologists working in schools who contributed to providing information and observations related to students' academic performance, which supports the accuracy of diagnosing and testing

the characteristics of the scale. A response of one choice illustrates the level of grade if the item is descriptive of the child's learning disabilities.

The LDES-4 yields scores for the seven main scales; listening, thinking, speaking, writing, reading, spiling and mathematical calculations, the total scores of each yield are measured by evaluating each statement it contains on a scale of (0-3) (not developmentally appropriate for age= 0, rarely or never= 1, inconsistently= 2, all or most of time= 3). Table (1) illustrate blueprint of LDES-4.

Table 1

The components of LDES-4 scale

Main scale	Subscale	Number of items
LDES-4 scale	Listening	7
	Thinking	17
	Speaking	9
	Writing	14
	Reading	14
	Spiling	7
	Mathematical calculations	20
Total		88

2.7 The procedures

Preparation of the scale

Initially, the original version of the Learning Disabilities Diagnostic Scale 4 (LDES4) was used as the primary model in the study. The scale was carefully reviewed by a group of experts in the field of learning disabilities and psychometrics to verify the appropriateness of the theoretical content of the scale to the cultural and linguistic realities of students in the Palestinian environment This step was essential to ensure that the scale accurately reflects aspects of learning disabilities.

Translation procedure

Tools that have been created in one language and translated into another are frequently used in cross-cultural study. Initial translation, professional evaluation, and back translation are all components of the conventional translation process. Since no single

technique can guarantee equivalence, Thus, the translation procedure mainly embraces three segments:(a) translating the test from the source to target language, (b) translating the test back into the source language (back translation), and (c) using independent teams of qualified translators to review the original, back-translated, and target-language versions of the instrument for equivalence and resolve discrepancies.

Sample selection

The study sample was carefully selected to ensure that all categories of students with learning disabilities were represented. The sample included students from various schools in Qalqilya, Nablus, Jenin, Hebron, and Tulkarem. (400) students were selected based on specific criteria, including the presence of reports from specialized teachers or medical reports indicating a specific learning difficulty (such as disabilities in reading, writing or arithmetic) or unspecified, and a control group of 150 students without learning difficulties was also included to conduct a comparative analysis, and we used the stratified random sampling method to ensure the representation of different categories of learning difficulties in the sample.

Data analyses

After selecting the sample, the scale was distributed to teachers (resource rooms / Arabic language / mathematics) through individual communication and disseminated to groups. All questions were explained to the participants and made sure that they fully understood what was being asked of them. Participants were given sufficient time to answer the questions and then made sure that all answers were collected in complete confidentiality and in accordance with the ethical procedures adopted in the research.

Accuracy of data entry

Values that lie beyond the range and implausible values were checked by the researcher. For this purpose, frequencies and simple descriptive statistics for the ranges, means, and standard deviations were calculated.

Missing data analysis

The researcher asked the participants not to leave any paragraph without evaluation, and the participants adhered to this, as the researcher did not find any empty paragraph.

Univariate and multivariate normality

In structural equation modeling, procedures are premised on the concept of multivariate normality. In simpler terms, multivariate normality means that all univariate distributions are normal, bivariate joint distributions of any pair of variables are normal, and finally, all linear combinations of those variables are normally distributed. While it is practically impossible to test every aspect of multivariate normality, one can often identify some cases of multivariate nonnormality just by looking at univariate distributions.

The variables' data distributions may show a significant degree of skew, kurtosis, or both. A researcher may test whether a variable is significantly skewed or kurtotic by taking the unstandardized value of either the skewness or kurtosis index and dividing it by its respective standard error, with the resulting ratio being interpreted as a z-test of skewness or kurtosis. Thus, a value greater than 1.96 would have a p-value less than .05, and greater than 2.58 would give a p-value less than .01: therefore, it would indicate a significant level of skewness /kurtosis in the data..

Table 2

Skewness and Kurtosis Indices for LDES4 Components

Subscale	Skewness	Standard error	Ratio	Kurtosis	Standard error	Ratio
Listening	0.334	0.220	1.50	-0.489	0.355	1.11
Thinking	0.229	0.220	1.33	-0.476	0.355	1.21
Speaking	0.231	0.220	1.21	-0.514	0.355	1.42
Writing	0.550	0.220	1.16	-0.334	0.355	1.27
Reading	0.122	0.220	1.31	-0.617	0.355	1.51
Spiling	0.411	0.220	1.25	-0.518	0.355	1.21
Mathematical calculations	0.341	0.220	1.09	-0.710	0.355	1.51

Presented above in the table, one can observe that all skewness and kurtosis measures remain below the 1.96 threshold. These results, however, provide us with substantial evidence regarding the suggestion of univariate and multivariate normality.

Outliers

Outliers are extreme or uncharacteristic cases that may bias estimators or significance tests. Univariate or multivariate outliers are cases. Univariate outliers tend to be cases that

have high scores on a single variable and can be identified through the examination of z-scores; a z-score greater than 3.0 in absolute value indicates that a case is unusual and possibly an outlier. Univariate outliers are indicated by the cut-point of three, and the results of this are shown in Table 3.

Table 3

Z-scores of LDES4 Components

Subscale	Min value	Max value
Listening	-1.41	1.11
Thinking	-1.52	1.21
Speaking	-1.79	2.42
Writing	-1.18	2.50
Reading	-1.76	1.13
Spiling	-2.11	2.17
Mathematical calculations	-1.15	2.22
Total	-2.09	2.25

Conversely, multivariate outliers could be extreme on some score or have an unusual combination of score values, but none of the original individual variables yield extreme scores.

Based on the entire data screening results, five have been identified as outlying cases in the sample, whereas the researcher preferred to keep all cases even those which are regarded as outliers in order to get a more realistic picture of results. All subscales violated the assumption of univariate and multivariate normality. Further, in the instance that data sets do not violate the underlying assumptions of SEM, the maximum likelihood estimation method [ML] is a good option. Therefore, ML method was used to estimate parameters of study variables.

2.8 Statistical Analysis

The data were analyzed by using version 20 of the SPSS Amos. The Investigator applied the following techniques:

1. Frequencies, percentages, means, and standard deviations were used to describe the respondents.

2. Independent Samples T-Test for examination of statistical differences between means of two parameters (gender and place of residence variables).
3. One-Way ANOVA to test for significant differences between three or more groups (age and place of residence variables).
4. LSD Post Hoc Test for pinpointing which means differ.
5. Skewness and kurtosis indices for LDES4 subscales and the overall scale were computed for checking univariate and multivariate normality.
6. Z-score values of the LDES4 components were calculated for checking univariate outliers.
7. Multivariate outliers were checked using the Mahalanobis distance analysis.

Chapter Three

The Results

3.1 Introduction

This chapter presents the results of analysis data collected, in order to determine the validation of the LDES-4 in Arabic within a Palestinian context. Furthermore, this chapter presents the main differences and similarities between the characteristics of LDES-4 scale applied on the children and adolescents of Palestine. In addition, this chapter include the answer of research question and hypothesis.

3.2 Descriptive Analysis

According to the questionnaire design, respondents have different personal information; these differences introduce different responses toward the validation of the LDES-4 scale in Arabic within a Palestinian context. The following results shows these differences.

3.3 Personal Information

The total number of participants from the Palestinian schools is 400 children and adolescents, with response rate 94%, the following description presents the characteristics of the participants.

Gender

According to Table (4), the sample included 166 males who form 41.5% of the participants, and 234 females who form 58.5% of the participants, and figure (1) shows the gender distribution in this research.

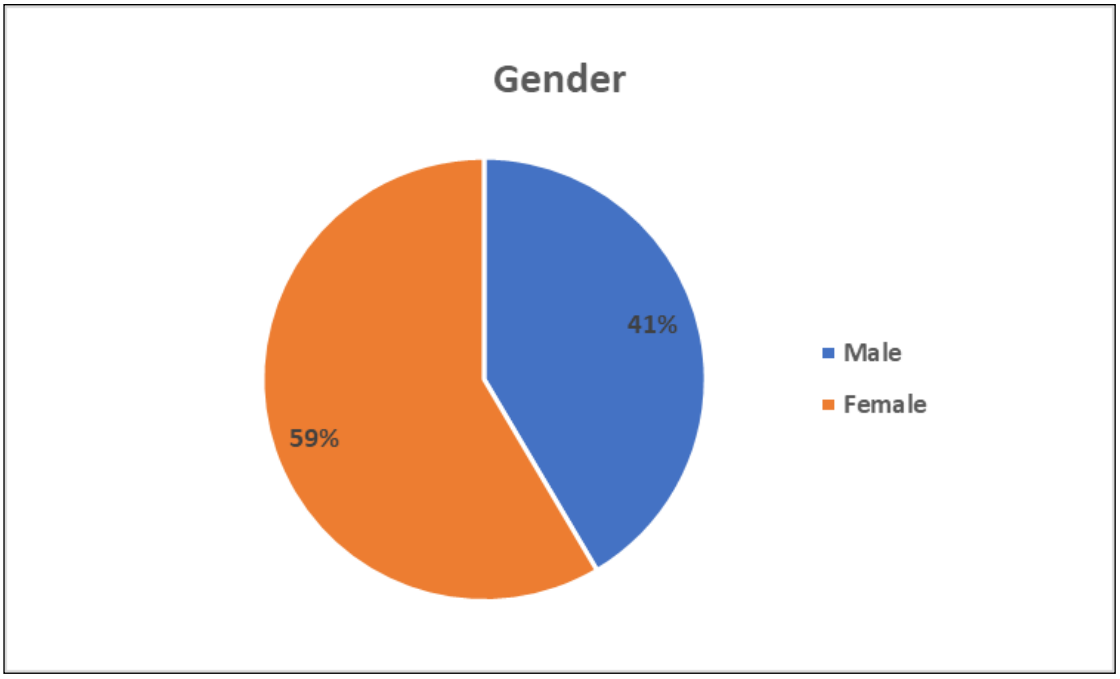
Table 4

Distribution of Gender

Variable	Characteristics of the Variable	Frequencies	Percentage
Gender	Male	166	41.5%
	Female	234	58.5%
	Total	400	100%

Figure 1

Distribution of Gender



Age

Age variable was divided into three period intervals. Table 5 in shows the details of the participant's age. Figure 2 shows the age distribution in this research.

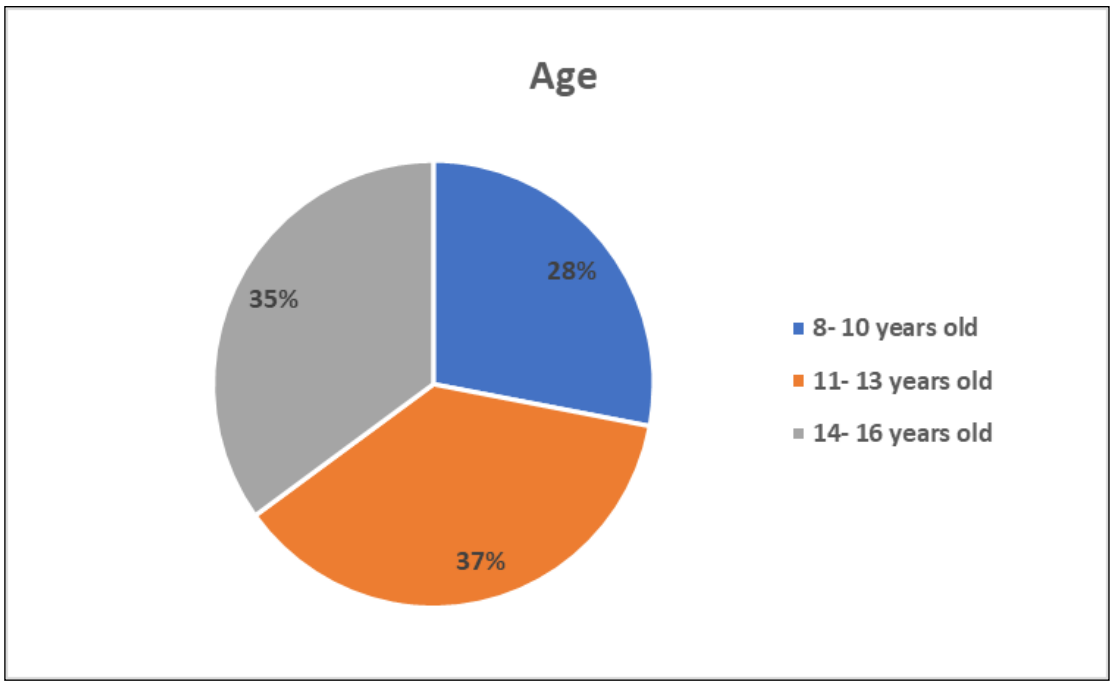
Table 5

Distribution of age

Variable	Characteristics of the Variable	Frequencies	Percentage
age	8- 10 years old	112	28%
	11- 13 years old	148	37%
	14- 16 years old	140	35%
	Total	400	100%

Figure 2

Distribution of age



Place of residence:

Place of residence variable was divided into three subcategories. Table (6) in shows the details of the participant's place of residence. Figure (3) shows the place of residence distribution in this research.

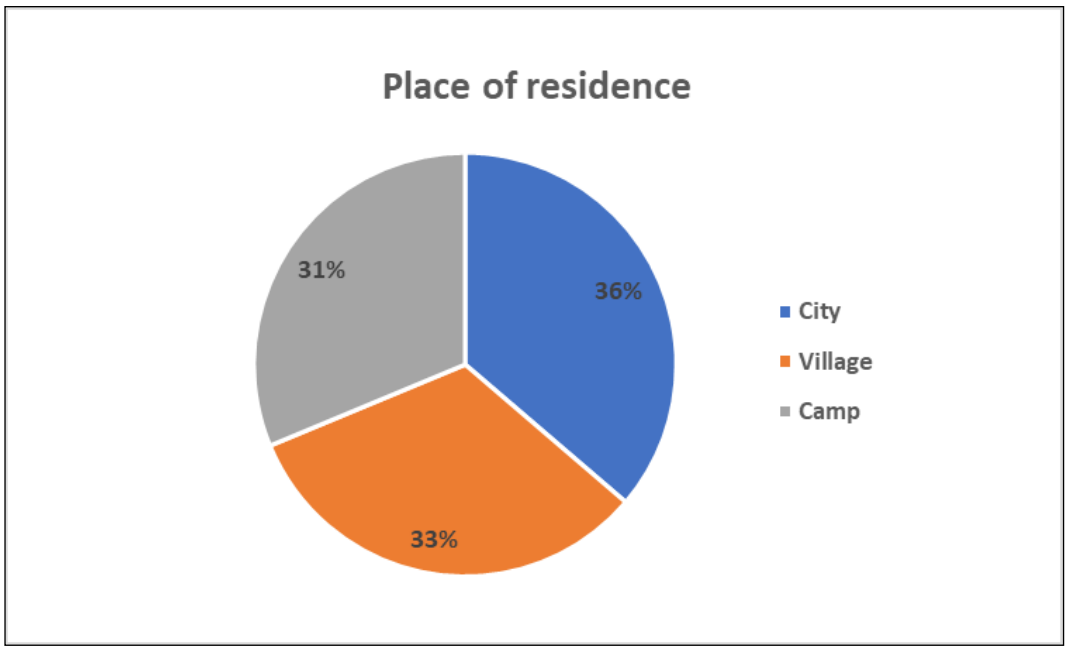
Table 6

Distribution of place of residence

Variable	Characteristics of the Variable	Frequencies	Percentage
Place of residence	City	145	36.3%
	Village	130	32.5%
	Camp	125	31.3%
	Total	400	100%

Figure 3

Distribution of place of residence



The results of analysis personal information data illustrate the following facts:

1. The study consisted of 41.5% male's participants and 58.5% female's participants.
2. The highest percentage of participants in age field is (11-13 years old) with 37% of research sample, then (14-16 years old) with 35%, and last (8-10 years old) with 28% of the sample size.
3. The highest percentage of participants in the study sample resided in (village) with 32.5% of research sample, then in (city) with 36.3%, and last in (camp) with 31.3% of the sample size.

3.4 Statistical Differences among Research Scale

Factor Analysis:

The concurrent validity of the LDES-4 is extracted after distributing to a sample of (400) individuals from the Palestinian public schools, through:

Calculating the correlation of the scale's paragraphs with the dimension to which each paragraph belongs, as shown in table (4.3) and tables (4.4).

Table 7

Concurrent validity of LDES-4 scale paragraphs

	NO.	Correlation	P-value	NO.	Correlation	P-value
Listening	1	0.781	0.00**	2	0.809	0.00**
	3	0.774	0.00**	4	0.658	0.00**
	5	0.687	0.00**	6	0.911	0.00**
	7	0.600	0.00**			
Thinking	8	0.708	0.00**	9	0.681	0.00**
	10	0.832	0.00**	11	0.717	0.00**
	12	0.776	0.00**	13	0.690	0.00**
	14	0.711	0.00**	15	0.706	0.00**
	16	0.657	0.00**	17	0.811	0.00**
	18	0.781	0.00**	19	0.699	0.00**
	20	0.809	0.00**	21	0.743	0.00**
	22	0.770	0.00**	23	0.754	0.00**
	24	0.793	0.00**			
Speaking	25	0.681	0.00**	26	0.900	0.00**
	27	0.717	0.00**	28	0.872	0.00**
	29	0.690	0.00**	30	0.781	0.00**
	31	0.605	0.00**	32	0.669	0.00**
	33	0.843	0.00**			
Reading	34	0.899	0.00**	35	0.861	0.00**
	36	0.676	0.00**	37	0.844	0.00**
	38	0.558	0.00**	39	0.782	0.00**
	40	0.845	0.00**	41	0.799	0.00**
	42	0.677	0.00**	43	0.735	0.00**
	44	0.814	0.00**	45	0.907	0.00**
	46	0.816	0.00**	47	0.884	0.00**
Writing	48	0.599	0.00**	49	0.581	0.00**
	50	0.689	0.00**	51	0.698	0.00**
	52	0.683	0.00**	53	0.600	0.00**
	54	0.618	0.00**	55	0.738	0.00**
	56	0.788	0.00**	57	0.782	0.00**
	58	0.738	0.00**	59	0.778	0.00**
	60	0.903	0.00**	61	0.698	0.00**
Spelling	62	0.871	0.00**	63	0.800	0.00**
	64	0.883	0.00**	65	0.699	0.00**
	66	0.824	0.00**	67	0.673	0.00**
	68	0.870	0.00**			
Mathematical calculations	69	0.691	0.00**	70	0.804	0.00**
	71	0.688	0.00**	72	0.822	0.00**
	73	0.679	0.00**	74	0.672	0.00**
	75	0.687	0.00**	76	0.781	0.00**
	77	0.699	0.00**	78	0.683	0.00**
	79	0.724	0.00**	80	0.699	0.00**
	81	0.729	0.00**	82	0.634	0.00**
	83	0.715	0.00**	84	0.599	0.00**
	85	0.738	0.00**	86	0.609	0.00**
	87	0.781	0.00**	88	0.856	0.00**

The previous tables that all items of the scales were related to the dimension to which they belong, between (0.600** - 0.911**), and that the level of significance was (0.000), which is smaller than (0.05). It is considered an indicator of the validity of all items of the scales, as indicated high internal consistency.

The researcher extracted the exploratory factor analysis (CFA) of the LDES-4 scale, by examining the ratio of variance between the items of the LDES-4 scale, as shown in the table (8).

Table 8

CFA results for LDES-4 scale

No.	Scale	Variance	Root
1	The first factor	23.002	2.998
2	The second factor	17.543	2.506
3	The third factor	9.696	1.779
4	The fourth factor	6.681	1.371

According to the table above there are four factors that explained the variance, as the first factor explained 23.002 of the variance and the latent root of the first factor reached 2.998, the second factor explained 17.543 of the variance and the latent root of the second factor reached 2.506, the third factor explained 9.696 of the variance and the latent root of the third factor reached 1.779, and the third factor explained 6.681 of the variance and the latent root of the third factor reached 1.371, which is a good ratio for LDES-4 scale.

In order to verify these results, an exploratory factor analysis was performed to examine the saturations of the LDES-4 scale factors on the dimensions to which they belong, as shown in the table (9).

Table 9

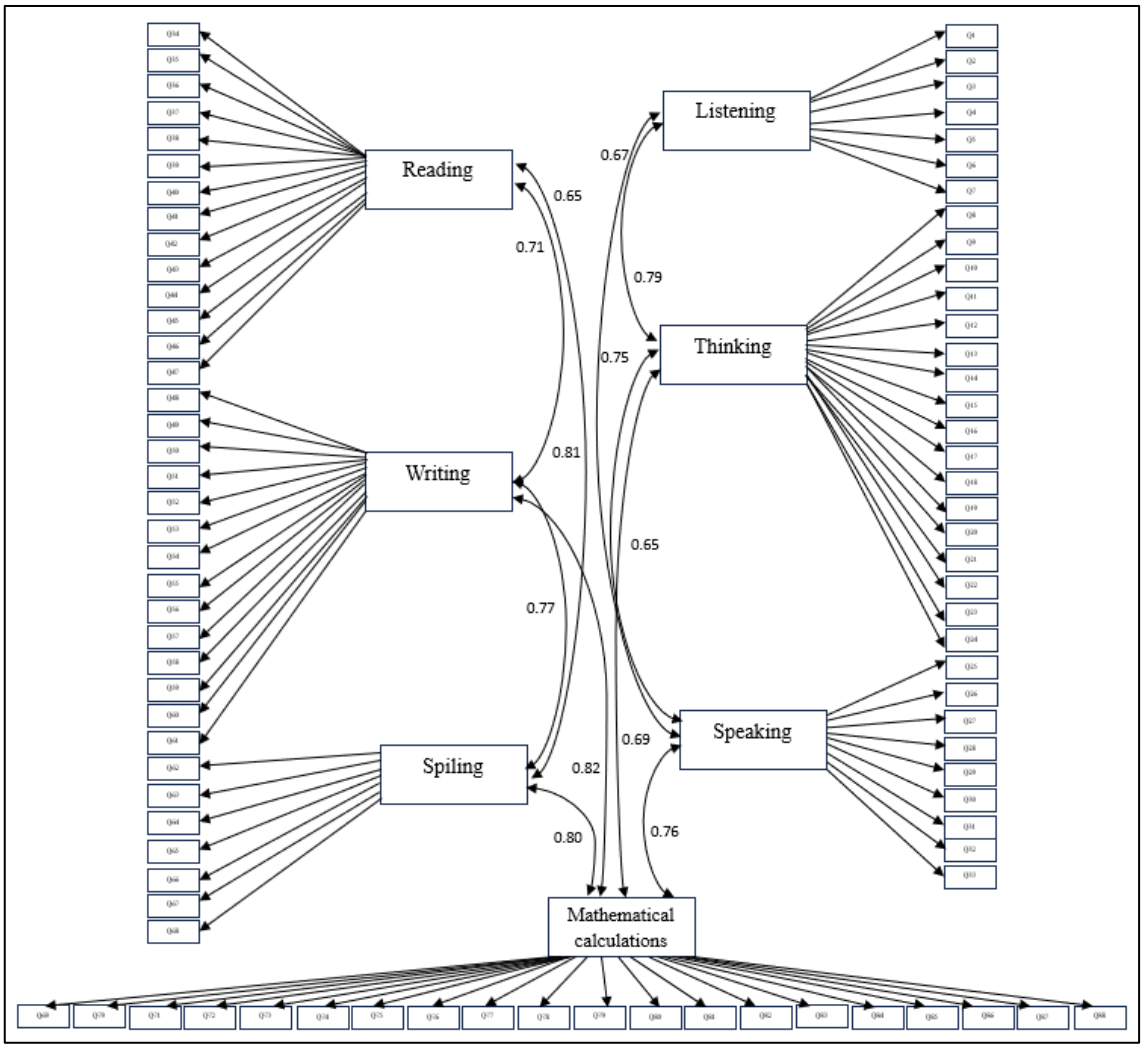
Analyzing of CFA results for LDES-4 scale items

Category Num.	1	2	3	4
Listening	0.690	0.374	0.324	
Thinking	0.665			
Speaking	0.634			
Writing	0.630	0.439		
Reading	0.537	0.490	0.478	
Spiling	0.488	0.469	0.324	
Mathematical calculations	0.471	0.407	0.449	

The previous table show that there is no saturation for any of the category with a negative saturation, and for LDES-4 scale it ranged between 0.324 as the lowest value for spiling category, and saturation with 0.690 as the highest value for listening category.

Figure 4

LDES-4 scale



Reliability of LDES-4 scale items

Validity and reliability are two factors which any qualitative researcher should focus on while designing data collection, analyzing results and judging the quality of this research.

The reliability of the scale has been measured by using Cronbach Alpha Equation scoring. To ensure the validity of the scale after translation to Arabic, it has been judged by a jury of experts including (3) professors. The respondents' comments and the jury's suggestions

were taken into consideration to modify and improve the scale content and wordings by omitting, adding or rephrasing themes and items.

Most of their remarks were about adding a remark that the participants can contact the researcher if they have any questions, paraphrasing some paragraphs of the questionnaire, dividing the paragraphs into positive and negative aspects, grammatical and stylistic modifications, omitting unnecessary parts from the scale. In doing so, the validity of the questionnaires was achieved and the final draft of the questionnaires became in the final shape.

In addition, the Cronbach Alpha coefficient is used to find out the reliability for both the seven domains of the scale and total score. Table (10) shows reliability coefficients of each domain and the total score "degree" of the study domains.

Table 10

Reliability coefficients of each domain and the total score of the study

Domains	Number of items	Reliability coefficient
Listening	7	0.841
Thinking	17	0.943
Speaking	9	0.923
Writing	14	0.951
Reading	14	0.950
Spiling	7	0.942
Mathematical calculations	20	0.973
Total score	88	0.984

Table (10) shows that all the reliability coefficients are high, and thus suitable for scientific purposes.

LDES-4 Scale Analysis:

This section describes the degree of LDES-4 scale for the research respondents. Moreover, the researcher adopted the following estimated to separate the degree of approval as following:

1. The percentage (84% or more) has a very large degree.

2. The percentage (68% - 84%) has a high degree.
3. The percentage (52% - 68%) has medium degree.
4. The percentage (36% - 52.0%) has a low degree.
5. The percentage (less than 36%) has a very low degree.

In order to evaluate the LDES-4 scale in Arabic from research participants perspectives in Palestinian context, the researcher calculated the total score of research domains in the Table B.1 in appendix B.

The results presented in the table above indicate that the total score of study scale related to psychometric properties and factorial structure of learning disability scale within the Palestinian context (LDES-4) in Arabic ranged from medium to large, the arithmetic averages for the mathematical calculations scale paragraphs is the highest, which reached (70.9%), then the arithmetic averages of spiling scale paragraphs which reach (68.6%), this means that learning difficulties were primarily present in these categories, to a greater degree and at a higher level than in the rest of the scale categories. While the arithmetic means for the (thinking and speaking) domain paragraphs was the lowest among all categories which reached (55.6%) (55.3%) respectively, and with regard to the total score, it was medium, in terms of the arithmetic mean that reached (62.3%), and this result indicates that the impact of all study scale was significant in relation to the study question and the paragraphs included in the questionnaire questions according to the answers of the study sample.

In order to prove the significance of the impact of the study scale, one sample T-test used to show that in Table B.2 in appendix B.

One sample T-test shows that the there is no statistically significant differences among the participants viewpoint. In addition, in this study it was examined whether the LDES-4 scale record psychometric properties and factorial structure of learning disability scale within the Palestinian context.

To determine the level of relationship between the scale domains, Pearson correlation test was used, and the results were as shown in Table B.3 in appendix B.

The results of the Pearson correlation test show that there is no relationship between the participants viewpoint about the different domains scale.

Statistical Differences among Survey Respondents

Statistical comparisons in research participants are represented in this section as per the received data. Independent Samples Test (t-test for Equality of Means) and one-way ANOVA Test are used in order to explain these differences, as the correlations will have between qualitative and quantitative factors.

In this case, the dependent variables are quantitative, while the T-test method compares means of qualitative independent variable which has two levels, and one-way ANOVA compares means of qualitative independent variable which has more than two levels.

The study comprises two hypotheses concerning the sample intended to discuss the differences in the view of responders. The researcher employed a three-way analysis T-test, ANOVA, and LSD test. Therefore, the researcher used T-test if there were only two variables (for gender variable), and he used ANOVA test when there were more than two variables (for age and place of residence variable); on the other hand, she used LSD test when required more analysis than ANOVA test.

First hypothesis

There is no statistically significant differences among the viewpoint of participants related to the psychometric properties and factorial structure of learning disability scale within the Palestinian context due to the gender variable?

This study included both genders males and females, both participated in the survey; therefore, this variable has two levels, so T-test method is used. Statistical differences between males and females.

The Tables B.4 and B.5 in appendix B shows full details about this result.

T-tests of the sample demonstrate that the hypothesis "there is no statistically significant differences among the viewpoint of participants related to the psychometric properties and factorial structure of learning disability scale within the Palestinian context due to the

gender variable" because the significant important more than 0.05 (P > 0.05) in the scale total score.

Second hypothesis

There is no statistically significant differences among the viewpoint of participants related to the psychometric properties and factorial structure of learning disability scale within the Palestinian context due to the age variable?

According to this study age variable was collected as interval data, therefore the researcher used One-way ANOVA test to determine the correlation between participant again the psychometric properties and factorial structure of learning disability scale within the Palestinian context due to the age variable.

The Tables B.6 and B.7 in appendix shows full details about this result.

To analyze the previous tables, the researcher used ANOVA test like table below.

ANOVA test shows that the hypothesis "there is no statistically significant differences among the viewpoint of participants related to the psychometric properties and factorial structure of learning disability scale within the Palestinian context due to the age variable " accepted because the significant important more than 0.05 (P > 0.05).

Third hypothesis

There is no statistically significant differences among the viewpoint of participants related to the psychometric properties and factorial structure of learning disability scale within the Palestinian context due to the place of residence variable?

According to this study age variable was collected as categories data, therefore the researcher used One-way ANOVA test to determine the correlation between participant again the psychometric properties and factorial structure of learning disability scale within the Palestinian context due to the place of residence variable.

The tables B.8 and B.9 in appendix B shows full details about this result.

To analyze the previous table, the researcher used ANOVA test like table B.9 in appendix B.

ANOVA test shows that the hypothesis "there is no statistically significant differences among the viewpoint of participants related to the psychometric properties and factorial structure of learning disability scale within the Palestinian context due to the place of residence variable" accepted because the significant important more than .05 ($P > 0.05$).

Chapter Four

Discussion, Conclusions, Recommendations

This chapter includes a discussion of the research questions and hypotheses. Finally, recommendations for the study are provided based on the findings.

4.1 Discussion

The results of the First Question

The exploratory factor analysis examining saturation levels did not reveal any negative loadings; saturation values ranged from 0.324 for the spelling category to a maximum of 0.690 for the listening category, reflecting the internal consistency of the scale and the absence of redundant or inadequately associated items. In addition, the reliability of the scale was established through Cronbach's alpha, which produced high values for each domain (with 0.841 for listening, 0.943 for thinking, 0.923 for speaking, 0.951 for writing, 0.950 for reading, 0.942 for spelling, and 0.973 for mathematical calculations) and an overall reliability of 0.984, thus reinforcing the confidence in using the scale as an effective tool for scientific research. Based on these comprehensive indicators—including verification of the factorial structure, high statistical correlations of the scale's items, strong internal consistency as confirmed by saturation analysis, and impressive reliability achieved after expert review and revision of the items—it can be concluded that the LDES-4 scale possesses a robust and reliable structure that ensures accurate measurement of learning disabilities among learners, thereby providing a valuable research tool that contributes to comprehensive evaluation and the formulation of precise educational recommendations grounded in solid statistical results and in-depth scientific analysis.

These in-depth analyses indeed attest to the validity and reliability of the LDES-4 scale in measuring the various dimensions of listening, thinking, speaking, writing, reading, spelling, and even mathematical computations with learners of learning disabilities.

The high correlation coefficients among the scale items within their respective dimensions (ranging from 0.600 to 0.911) with significance level ($p = 0.00$) strengthens the assumption that each item gets close to the dimension it intends to measure thereby ensuring strong internal consistency. This provides a logical rationale for the researcher who relied upon this as a foundation for developing a detailed scale. In doing so, the

analysis of factor saturation revealed that no items were negatively loaded, signifying that all items were positively aligned with their respective dimensions, emphasizing the theoretical-practical coherence within the design of the scale and the traits it intended to measure. The relatively high coefficients of reliability produced through Cronbach's Alpha add to these affirmations regarding the dependability with which the scale holds. These coefficients have been enhanced by modifications stemming from expert review and feedback given by respondents as validation of their effectiveness to further improve the comprehensive quality of the scale. Therefore, the researcher sees this organization of constructs into a four-factor measurement as not just an arbitrary grouping of items statistically, but a true representation of a scientifically balanced scale design alluding to an understanding of differences in individuals and the peculiarities of students with learning disabilities. This combination of theoretical accuracy and practical application underlines the scale's capacity to afford a broad picture that is fair as well as comprehensive for the various dimensions of academic performance and cognitive handling.

The results of the Second Question

The results indicate that the psychometric properties of the Learning Disabilities Diagnostic Scale 4 (LDES-4) in the Palestinian context, after being applied in Arabic, have shown a medium to high effectiveness in measuring learning difficulties across various domains. Specifically, the mathematical calculations and spiling domains registered high evaluation percentages 70.9% and 68.6%, respectively, indicating that these areas were the most prominent in exhibiting learning difficulties among the sample. In contrast, the listening, thinking, speaking, writing, and reading domains yielded moderate results with percentages ranging between 55.3% and 65.6%, suggesting that the scale’s impact in these areas was noticeable yet less intense compared to the aforementioned domains.

Furthermore, the overall mean of the scale, calculated at 62.3%, confirms that the effect of all scale items was statistically significant according to the sample responses, thereby reflecting the instrument’s coherence in capturing information related to learning disorders. The one-sample T-test, which demonstrated high T-values with statistical significance (Sig. = 0.00) across all domains, further validates the reliability and accuracy of the participants’ responses. Pearson correlation test perceived considerable, positive,

and interlinked relationships among these domains but found no significant differences in participants' perceptions with regard to these areas denoting consistent and stable perception of learning difficulties. Hence, this scale can be proved to possess good psychometric properties under Palestinian conditioning for being a well-reliable and cohesive tool for detecting learning disabilities at various levels, which generally enhances its application for research and diagnostic studies in this area.

The results state that the LDES-4 scale, studying psychometric properties and overall structure, would reflect a real complex education in the Palestinian context, with different degrees of learning difficulties within different domains. As such, those domains basically dependent on skills of mathematics and spiling (70.9 and 68.6%, respectively) appear to be more susceptible to educational problems than thinking and speaking (55.6 and 55.3%, respectively). This can refer to the cognitive and linguistic demands specific to these subjects. High precision and concentration required in mathematical and spiling tasks can directly be affected by teaching methods and curricula applied in the Palestinian educational system.

The noticeable differences in the results suggest that students might encounter greater difficulties in domains that necessitate complex information processing and practical application of linguistic skills, while the consistent positive intercorrelations among all domains, as indicated by the Pearson test, point to the existence of an underlying common factor in learning difficulties. This demonstrates the tool’s capacity to capture the comprehensive nature of these challenges in a coherent manner.

Furthermore, the high statistical significance observed in the one-sample T-test (Sig. = 0.00) confirms the uniformity of participants' responses, which reinforces my perspective as a researcher that the observed disparities among the domains likely stem from specific educational and cultural factors present in the Palestinian context. Such factors may include the influence of curricula, teaching methodologies, and assessment strategies, which potentially accentuate certain difficulties over others. Consequently, I believe that these results underscore the need to reconsider teaching strategies and adapt curricula to better meet the actual educational needs. The effectiveness of the scale lies in its ability to reveal these differences and identify the domains that require targeted interventions to overcome the obstacles impeding the learning process.

The results of the Third Question

Through analyzing the data using a t-test to compare genders and one-way ANOVA tests for age groups and place of residence, it becomes clear that the study did not reveal any statistically significant differences in the level of learning disabilities, as measured by the psychometric properties and factorial structure of the learning disability scale, among the demographic variables examined.

Specifically, the t-test comparing male and female responses resulted in a significance value of 0.224, which is above the conventional threshold of 0.05, indicating no significant difference between genders. Similarly, the one-way ANOVA for the age variable, which categorized participants into the (8–10), (11–13), and (14–16) year-old groups, yielded a significance value of 0.991, demonstrating that the responses across these age groups did not differ significantly. In addition, the ANOVA test conducted for the place of residence variable—comparing responses from city, village, and camp residents—produced a significance value of 0.530, further reinforcing that there is no significant variation in responses based on the participants' place of residence. Overall, these findings support the acceptance of the null hypotheses, confirming that the participants' views on the psychometric properties and factorial structure of the learning disability scale remain consistent regardless of gender, age, or place of residence.

From the researcher's perspective, the results obtained through the applied statistical analyses (i.e., the t-test for comparing genders and ANOVA tests for age groups and place of residence) clearly indicate that there are no statistically significant differences in the evaluation of the psychometric properties and factorial structure of the learning disability scale among the various demographic categories.

This means that the outcomes obtained from the participants, whether they are male or female or belong to the age groups (8–10), (11–13), and (14–16) or come from different places of residence (city, village, and camp), are very similar. Accordingly, the researcher believes that this consistency demonstrates that the measurement tool used in the study exhibits stability and reliability across different segments of the sample, indicating that it is not influenced by demographic variables that might otherwise cause variation in the results.

The researcher further explains that the reason for this may be attributed to several factors; on one hand, the theoretical design of the scale itself is based on general and comprehensive concepts of learning disabilities that are not affected by specificities such as gender, age, or place of residence, ensuring that the evaluation is uniform among all participants. On the other hand, the selection of the sample might have been sufficiently representative in terms of its demographic distribution, reflecting the homogeneity of the educational and environmental experiences among the participants in the Palestinian context, and thus no notable differences attributable to these variables emerged.

Moreover, the researcher clarifies that the use of precise analytical methods such as the t-test and ANOVA tests enabled the determination that any potential differences fell within the range of random variation or natural fluctuations, and did not reach a statistically significant level beyond the threshold value 0.05, thereby supporting the hypothesis that no real differences exist. In light of this, the researcher concluded that the results confirm the stability of the participants' views and the reliability of the learning disability scale, providing a robust basis for relying on it in future studies without the need for modifications or recalibration based on the aforementioned demographic variables.

4.2 Conclusions

The results of this study showed that the Learning Disabilities Evaluation Scale - Fourth Edition (LDES-4) is valid in the Palestinian context and has undergone study concerning its factorial structure and scientific validity using a sample of learners with learning disabilities. The exploratory factor analyses suggest four main factors that accounted for significant amounts of variance 23.002% for the first factor, 17.543% for the second factor, 9.696% for the third factor, and 6.681% for the fourth factor), thus strengthening the overall structure of the scale. The correlation coefficients of the items with their respective dimensions ranged between 0.600 and 0.911, at statistically significant levels 0.000, hence confirming strong internal consistency. Thus, it can be concluded that the validity of all items stands on a high pedestal.

Regarding reliability, Cronbach's Alpha coefficients for each domain of the scale were high, ranging from 0.841 to 0.984, indicating strong reliability for both scientific and practical use. Moreover, descriptive analyses and statistical tests (such as the T-test and

ANOVA) showed no significant differences in participants' responses based on demographic variables such as gender, age group, and place of residence (with p-values exceeding 0.05), affirming the scale's consistency and stability across different categories. The results also revealed that the areas related to mathematical calculations and spelling recorded relatively high difficulty levels (70.9% and 68.6%, respectively), indicating greater challenges in these domains compared to thinking and speaking, which had the lowest scores (55.6% and 55.3%). The overall average score of the scale remained at a moderate level 62.3%.

Based on these findings, it can be concluded that the LDES-4 scale demonstrates strong psychometric properties and an accurate factorial structure, enabling it to effectively assess learning disabilities within the Palestinian environment. This makes it a reliable tool for identifying cognitive and functional differences among learners, supporting its practical application in educational research and the development of future intervention strategies aimed at enhancing the learning process and addressing the needs of individuals with learning disabilities.

4.3 Recommendations

Based on the study results, the researcher recommends the following:

- Given the high internal consistency of the various items in the LDES-4 scale, it is recommended to use it more widely in assessing learning difficulties among Palestinian students.
- Training programs can be developed for teachers and special education specialists on how to apply the scale and interpret its results to ensure best practices in identifying and diagnosing learning difficulties.
- Since no statistically significant differences were found between genders or age groups regarding the scale's characteristics, it is advisable to conduct additional studies targeting larger and more geographically and socially diverse samples. These studies could help examine the influence of environmental and cultural factors on the scale's performance.
- As arithmetic and spelling were among the highest-scoring domains, it may be beneficial to reconsider the difficulty level of the items related to these areas to ensure

they accurately measure the level of learning difficulties among students while avoiding inaccurate results due to relatively easier items.

- Based on the research findings confirming the reliability of the scale, it is recommended to incorporate it as a fundamental tool in early intervention plans within Palestinian schools. This can help guide educational programs toward effectively meeting the actual needs of students with learning difficulties through appropriate individualized plans.
- To ensure diagnostic accuracy, it is preferable to integrate the results of the LDES-4 scale with clinical assessments and additional measurement tools, enhancing the ability to provide precise support for students. This integration can be implemented through multidimensional assessment programs supervised by psychologists and educational specialists.
- Given that the scale has been translated and adapted to fit the Palestinian context, it is recommended to conduct periodic reviews to ensure its continued relevance and effectiveness, as well as to guarantee that the items accurately and objectively reflect learning difficulties.

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Appendices

Appendix A

قائمة التحقق من الصعوبات التعليمية قبل الاحالة

قائمة التحقق من الصعوبات التعليمية قبل الاحالة

اسم الملاحظ	
وظيفة الملاحظ	
تاريخ التقييم	

اسم الطالب: _____

تاريخ الميلاد: _____

العمر أثناء التقييم :_____

الجنس:_____

مكان السكن : _____

المدرسة:_____

الصف : _____

هل أعاد الطالب صف من الصفوف؟ _____ إذا نعم، لماذا؟_____

تاريخ ونتيجة فحص السمع: ان وجد _____

تاريخ ونتيجة فحص النظر: ان وجد _____

التصحيح :

قم بتقييم جميع العناصر باستخدام المحددات المرفقة ادناه (3-0 .)

يجب تصنيف جميع العناصر. لا تترك أي مربعات فارغة.

(ابدا)	(نادرا)	(احيانا)	(دائما)
اي ان مستوى الطالب أعلى من الجملة)	(نادرا ما تنطبق هذه الجملة على الطالب)	(تنطبق هذه الجملة على الطالب بشكل غير ثابت)	(تنطبق هذه الجملة على الطالب بشكل مستمر)
0	1	2	3

الاستماع		
1	لا يستمع الى كل ما يقال له (مثال: لا يستمع للجملة كاملة فتفوته نهاية الكلمات او الكلمات المفتاحية مثل "لا تفعل " ، إلخ....)	
2	لا يوجه انتباهه أو يفشل في الحفاظ على الانتباه للأصوات المهمة في البيئة المباشرة (مثال: لا ينتبه الى توجيهات المعلم،الخ).	
3	يعاني من صعوبة في التمييز بين الاصوات الكلامية المسموعة (غزل_ غسل) (فار – نار)	
4	يفشل في االانشطة التي تتطلب الاستماع (مثل :متابعة التوجيهات الشفهية، إلخ.)	
5	يحتاج الى تكرار الاسئلة والتوجيهات الشفوية بشكل متكرر ويحتاج الى تذكير مستمر (مثلا: يقول الطالب "لا أفهم")	
6	يكون تركيزه افضل عندما يكون قريبًا من مصدر الصوت (مثل :عند الجلوس قرب المعلم)	
7	يتطلب التواصل البصري من أجل الاستماع بشكل افضل	
	المجموع	

مهارات نمائية ادراكية		
8	لا يظهر مهارات الذاكرة القصيرة المدى (مثل عدم تذكره للتوجيهات المكونة من خطوتين أو ثلاث، عدم حفظ كلمات قصيدة أو أغنية، إلخ)	
9	يفشل في تذكر التسلسلات (مثل الاحداث في الروتين اليومي، أيام الاسبوع، أشهر السنة، إلخ)	
10	لا يظهر فهمًا للعلاقات المكانية (مثل الاعلى والاسفل، القريب والبعيد، فوق وتحت، إلخ .)	
11	يظهر صعوبة في الذاكرة البصرية (أي لا يتذكر المعلومات الواردة بصريًا)	
12	يظهر صعوبة في الذاكرة السمعية (أي لا يتذكر المعلومات التي تستقبل سمعيا.)	
13	لا يظهر فهما للاتجاهات (مثل يسار-يمين, امام-خلف, شرق- غرب, الخ.)	
14	يعاني من صعوبة في التركيز (مثل البقاء على مهمة محددة, استكمال المحادثة, الخ.)	
15	يصر على القيام بنفس الشيء مرارا و تكرارا (مثل الصعوبة في تغيير الانشطة و الروتين, الخ.)	
16	فشل في إظهار مهارة التنظيم (مثل عدم تنظيم الوقت، أو المهام، أو المواد، إلخ)	
17	يفشل في إظهار التفكير المنطقي (مثل مهارات اتخاذ القرار، حل المشاكل، االاستنتاج, إلخ)	
18	يواجه صعوبة في استرجاع أو تسمية الاشياء، الاشخاص، الاماكن، إلخ.)أي لا يفكر بهم على الاطلاق أو تكون استجابته متأخرة)	
19	يظهر مشاكل في التصوّر البصري (مثل الاغلاق البصري، الذاكرة البصرية، تمييز الشكل البصري من الخلفية، إلخ.)	
20	يواجه صعوبة في التصنيف (مثل عدم تمييز بالتشابهات، والاختلافات، إلخ)	
21	لا يعمم المعرفة من موقف إلى آخر (مثل تحديد كلمة "منزل" على بطاقة ورقية، لكنه لا يتمكن من تحديدها في جملة؛ يعد بالخمسات، لكنه لا يعد النقود , الخ)	
22	يظهر الالتباس (على سبيل المثال، يدخل الفصل أو المنطقة الخطأ)	
23	يتذكر المعلومات تارة و ينساها تارة أخرى	
24	يتطلب عرض المفاهيم ببطء وبتسلسل وتفكيك كبير حتى يفهمها .	
	المجموع	

التحدث		
25	يواجه صعوبة في تقليد أصوات الكلام.	
26	يحذف او يضيف او يستبدل او يعيد ترتيب الاصوات او الكلمات عندما يتكلم	
27	يخطئ او يحرف في نطق الكلمات أو الاصوات عند التحدث (لا ينسب ذلك إلى اللّهجة التي يتحدث بها مثلا (يقول عن رقم ثلاث – تلات وذلك بسبب صعوبة بالنطق وليس بسبب اللّهجة المحلية)	
28	لا يستخدم التصرف المناسب للفعل عندما يتحدث (جمع المؤنث -المذكر -التكسير)*	
29	لا يستطيع مجاراة الحديث مع أقرانه او الاكبر سنا اي صنع حوار كامل	
30	محصوله اللغوي محدود	
31	يفشل في استخدام تصريف الافعال بشكل صحيح عند الكلام (مثل الماضي، والحاضر، و المستقبل.)	

32	لا يتحدث بطلاقة (على سبيل المثال، يداخل الكلمات والجمل معًا، يتحدث بسرعة أو ببطء زائد، يتوقف في أماكن غير صحيحة، التأتأة إلخ)	
33	لا يكمل الجمل أو الافكار عند التحدث (على سبيل المثال، يتحدث في جمل غير منتهية ، يفشل في التفكير في الكلمات الصحيحة للتعبير عن افكاره ومشاعره ، إلخ.)	

القراءة		
34	لا يعلم جميع احرف الابجدية.	
35	لا يميز بين الحروف والكلمات المتشابهة	
36	يفشل في التعرف الى الكلمات وفق المستوى المحدد للصف	
37	لا يجيب بشكل صحيح على أسئلة الفهم من أنشطة القراءة	
38	يفقد مكانه أثناء القراءة (مثل اضاعة كلمات، أو أسطر، أو جمل عند القراءة)	
39	يواجه صعوبة في العلاقات بين الاصوات والرموز(اي انه يعرف شكل الحرف لكن لا يستطيع معرفة صوت الحرف مثل :عدم معرفته بان حرف الزاي هو نفسه صوته ز)	
40	يحذف أو يضيف أو يستبدل أو يعكس الحروف أو الكلمات أو الاصوات عند القراءة	
41	لا يظهر فهم للكلمات (اي لا يعرف معنى الكلمات التي يقراها)	
42	يقرأ الكلمات بشكل صحيح في سياق واحد ولكن لا يفعل ذلك في سياق آخر (م ثل يقرأ كلمة من بطاقة ورقية ولكنه لا يقرأها في جملة.)	
43	لا يقرأ بشكل مستقل (أي انه لا يختار القراءة كنشاط مستقل، يتجنب القراءة، إلخ.)	
44	يفهم ما يقرأ له\ا و لكن لا يفهم ما يقراه/ تقراه بصمت	
45	لا ينهي واجباته بسبب صعوبات القراءة (اي انه يقرأ بشكل بطيء جدا مما يمنعه على انهاء المهام في الوقت المحدد.)	
46	يواجه صعوبة في في مهارة الصوتيات أثناء القراءة (اي انه لا يفشل في اصدار الصوت بشكل صحيح)مثلا يقرأ الكسرة كانها حرف المد الياء)	
47	لا يظهر مهارات تحديد الكلمات (الصوتيات -الدلائل السياقية والبصريه)(مثلا لا يعرف ان الشدة عبارة عن حرفين واحد ساكن والاخر متحرك فلا يقراها بالشكل الصحيح)	
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	الحساب	
69	يتصعب الطالب في حل مسائل الرياضيات الكلامية .	
70	يفشل الطالب في التغيير والتنقل من عملية رياضية إلى أخرى، ومثا ًل على ذلك، البدء في عملية الجمع، وعدم الانتقال إلى عملية الطرح	
71	لا يفهم الطالب قواعد الرياضيات النظرية بلا أمثلة قوية، ومثا ًل على ذلك أن تعالج التعقيدات بالترتيب لحل المسائل في الرياضيات	
72	يفشل الطالب في الحل الصحيح في المسائل الرياضيات التي تتطلب عادة التجميع مثل (الحمل /الاستلاف)	
73	يبدأ بكتابة مسائل الرياضيات من اليسار حتى اليمين بدلا من العكس	
74	يفشل الطالب في ضرورة المتابعة المنظمة في المسائل الرياضيات، ومثال على ذلك، يقوم بإتباع خطوات غير منظمة، ويحذف خطوة، ..الخ	
75	يتعثر الطالب في الحل الصحيح في مسائل الرياضيات التي تتضمن القيّم الكسرية وتنفيذ العمليات ...الخ .	
76	يفشل الطالب في إثبات معرفة القيّم الرياضية.	
77	يرتبك الطالب في تحديد الاشارات الرياضية أثناء حله للمسائل الرياضية مثل (، +،- ، ×)	
78	يتصعب الطالب في الفهم الواضح للمفاهيم النظرية ومثا ًل على ذلك، (البُعد، الحجم، المسافة، الشكل) وإلى آخره	
79	يفشل الطالب في الحل الصحيح في المسائل الرياضية التي تتضمن المبالغ المالية أي التعرف على العملات المالية والقيمة، وإحصاء الاموال، والصرافة.	
80	يفشل الطالب في حل المسائل التي تحتوي على القِياس مثل الطول، الحجم، الوزن وإلى آخره.	
81	يفشل الطالب في حل المسائل التي تحتوي على عملية القسمة.	
82	لا يفهم الطالب مفهوم الوقت، أي لا يعرف كيف يُخبر عن الوقت، ولا التقويم ولا ا لمسائل الرياضية التي تحتوي على الوقت.	
83	يفشل الطالب في حل المسائل التي تحتوي على عملية الجمع.	
84	يفشل الطالب حل المسائل التي تحتوي على عملية الطرح.	
85	يفشل الطالب في حل المسائل التي تحتوي على عملية الضرب.	
86	لا يفهم الطالب معنى تخطي العد، (العد القفزي)	
87	لا يَتذ ُكر الطالب أساسيات الرياضيات	
88	لا يستخدم الطالب الاعمدة أثناء حل المسائل الرياضية وذلك يعني أنه يضع الارقام في عامود خاطئ، ويُضيف عبر الاعمدة	
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الكتابة		
48	لا يستطيع نسخ الحروف و الكلمات و الجمل والارقام عن قرب (مثل عدم النسخ من الكتاب المدرسي.)	
49	لا يستطيع نسخ الحروف و الكلمات و الجمل والارقام عن بعد (مثل عدم النسخ من السبورة.)	
50	لا يستخدم الرسمة بشكل صحيح عند الكتابة.	
51	يستخدم مساحات غير صحيحة بين الكلمات و الجمل اثناء الكتابة	
52	يكتب الحرف و الارقام بالمعكوس.	
53	لا يكتب داخل المساحة المعطاة (مثل : عدم الكتابة على الخط، إلخ)	
54	لا يستخدم ادوات الترقيم بشكل صحيح عند الكتابة.	
55	لا يستخدم التصريف المناسب للفعل عند الكتابة	
56	لا يكتب جمّلا كاملة أو يعبر عن أفكار كاملة عند الكتابة	
57	لا ينظم أنشطة الكتابة بشكل صحيح (مثل عدم تسلسل الاحداث، مراحل كتابة الفقرة، واستخدام ترتيب الكلمات الصحيح، إلخ.)	
58	يحذف او يضيف او يستبدل كلمات عند الكتابة.	
59	لا يقوم بتشكيل الحروف بشكل صحيح عند النسخ أو القراءة لكتابة (مثل عدم تشابه الاحرف بشكل صحيح، عدم ربط الحروف، إلخ.)	
60	يتعثر الطالب في اختيار الازمان المناسبة للافعال مثل الماضي والحاضر و المستقبل.	
61	لا يُفرق الطالب بين الحروف الكبيرة والصغيرة عند الكتابة فاما حروفا كبيرة جدًا أو صغيرة جدًا .	
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التهجئة(النطق)		
62	يفشل الطالب في استخدام قواعد التهجئة (على سبيل المثال تغيير الكلمة الى صيغة الجمع)	
63	يتصعب الطالب في التهجئة ، أي أنه لا يلفظ الكلمات بالطريقة التي تبدو عليها)	
64	يحذف الطالب حروف او يستبدلها او يُعاد ترتيبها أثناء تهجيها.	
65	يتصعب الطالب في لفظ الكلمات التي لا تتبع قواعد الاملاء (الحركات)	
66	لا يقرأ الطالب نهايات الكلمات قراءة صحيحة او يقوم بحذفها مثل النهايات (التنوين الخ..)	
67	يلفظ الطالب الكلمات لفظا صحيحا في سيا .ق معين ولا تكون صحيحة في سياق اخر ، ومثالا على ذلك " يقرأ الكلمة تكون صحيحة في الاختبار ولا يقرأ في جملة. لا يقرأ في الاملاء، فيقرأ في جملة، إلى آخره.	
68	يتطلب تدريبا وممارسة بشكل مستمر لكي يتعلم الطالب كيفية تهجئة ولفظ الكلمات ، وهذا يتطلب وقتًا أطول لتعلم الكلمات مقارنتًا باقرانه .(تاخر في اكتساب اللغة) *-	
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Appendix B

Tables

Table B.1

Degree of the LDES-4 scale domains

No.	Domain	Mean	SD	Percentage	Degree
1	Listening	1.73	0.684	57.6	Mid
2	Thinking	1.67	0.699	55.6	Mid
3	Speaking	1.66	0.823	55.3	Mid
4	Writing	1.97	0.736	65.6	Mid
5	Reading	1.87	0.756	62.3	Mid
6	Spiling	2.06	0.800	68.6	High
7	Mathematical calculations	2.13	0.770	70.9	High
	Total	1.87	0.621	62.3	Mid

Table B.2

One sample T-test for research scales

NUM	Domain	T	DF	Sig.
1	Listening	50.532	399	0.00
2	Thinking	47.656	399	0.00
3	Speaking	40.337	399	0.00
4	Writing	53.404	399	0.00
5	Reading	49.556	399	0.00
6	Spiling	51.619	399	0.00
7	Mathematical calculations	55.304	399	0.00

Table B.3

Pearson correlation test for research scale domains

domains		Listening	Thinking	Speaking	Writing	Reading	Spiling	Mathematical calculations
Listening	Pearson Correlation	1	0.726**	0.605**	0.519**	0.551**	0.471**	0.467**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000
Thinking	Pearson Correlation	0.726**	1	0.693**	0.713**	0.654**	0.562**	0.591**
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000	0.000
Speaking	Pearson Correlation	0.605**	0.693**	1	0.627**	0.592**	0.563**	0.475**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000
Writing	Pearson Correlation	0.519**	0.713**	0.627**	1	0.762**	0.798**	0.697**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000	0.000
Reading	Pearson Correlation	0.551**	.654**	0.592**	0.762**	1	0.755**	0.658**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000	0.000
Spiling	Pearson Correlation	0.471**	0.562**	0.563**	0.798**	0.755**	1	0.712**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000		0.000
Mathematical calculations	Pearson Correlation	0.467**	0.591**	0.475**	0.697**	0.658**	0.712**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	

Table B.4

Descriptive of the psychometric properties and factorial structure of learning disability scale within the Palestinian context due to the gender variable

Gender		N	Mean	Std. Deviation
LDES-4	Male	166	1.89	0.650
	Female	234	1.86	0.601

Table B.5

T-test for the psychometric properties and factorial structure of learning disability scale within the Palestinian context due to the gender variable

	T	df	F	Sig.
LDES-4	0.526	398	1.481	0.224

Table B.6

Descriptive of the participants related to the psychometric properties and factorial structure of learning disability scale within the Palestinian context due to the age variable

Age		N	Mean	Std. Deviation
LDES-4	8- 10 years old	112	1.87	0.689
	11- 13 years old	148	1.86	0.642
	14- 16 years old	140	1.87	0.541
	Total	400	1.87	0.621

Table B.7

ANOVA test for the participants related to the psychometric properties and factorial structure of learning disability scale within the Palestinian context due to the age variable

		Sum of Squares	df	Mean Square	F	Sig.
LDES-4	Between Groups	0.007	2	0.004	0.009	0.991
	Within Groups	153.981	397	0.388		
	Total	153.988	399			

Table B.8

Descriptive of the participants related to the psychometric properties and factorial structure of learning disability scale within the Palestinian context due to the place of residence variable

Place of residence		N	Mean	Std. Deviation
LDES-4	City	145	1.86	0.602
	Village	130	1.92	0.624
	Camp	125	1.83	0.642
	Total	400	1.87	0.621

Table B.9

ANOVA test for the participants related to the psychometric properties and factorial structure of learning disability scale within the Palestinian context due to the place of residence variable

		Sum of Squares	df	Mean Square	F	Sig.
LDES-4	Between Groups	0.491	2	0.246	0.636	0.530
	Within Groups	153.497	397	0.387		
	Total	153.988	399			

Appendix C

List of Arbitrators

Arbitrator	Meanings
Prof. Tamer Suhail	Teaching member at Al-Quds Open University, author of the book Learning Difficulties
Dr. Ola Suhail	Assistant Professor of Special Education
Ms. Doaa Hamdan	Master of Psychological Counseling - Special Education Specialist
Mr. Ayman Al-Qaryouti	Master of Psychological Counseling - Special Education Supervisor
Mr. Noor Owais	Master of Special Education - Resource Room Teacher
Ms. Intisar Shabita	Arabic Language Teacher
Ms. Farah Al-Nuaimi	Master of Clinical Psychology, Speech and Hearing Specialist

جـامعـــة النجاح الوطنية
كليـــة الدراســـات العليـــا

الخصائص السيكومترية والبناء العاملي لمقياس صعوبات التعلم في السياق الفلسطيني

إعداد
رانية عبد الفتاح عزت شتيوي

إشراف
د. فايز محاميد

قدمت هذه الرسالة استكمالاً لمتطلبات الحصول على درجة الماجستير في علم النفس الإكلينيكي، من كلية الدراسات العليا في جامعة النجاح الوطنية، نابلس – فلسطين.

2025

الخصائص السيكومترية والبناء العاملي لمقياس صعوبات التعلم في السياق الفلسطيني

إعداد

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إشراف

د. فايز محاميد

الملخص

تبحث هذه الدراسة في الخصائص السيكومترية والبنية العاملية لمقياس صعوبات التعلم ضمن السياق الفلسطيني. يتألف المقياس من 88 بندًا موزعة على سبعة مقاييس فرعية، وهي: الاستماع، والتفكير، والكلام، والقراءة، والكتابة، والرياضيات، والذاكرة، وقد تمت ترجمة هذا المقياس إلى اللغة العربية حتى يتناسب مع السياق الفلسطيني ويستخدم في السياق الفلسطيني. تألفت عينة البحث من 400 فرد مقيم في الضفة الغربية (تم اختيار العينة الطبقية العشوائية من خمس مناطق تعليمية هي : نابلس، الخليل، قلقيلية، جنين، وطولكرم)، وتراوحت أعمار الذين تم تطبيق المقياس عليهم من 8–16 . بعد اختيار العينة، تم توزيع المقياس على معلمين (غرف المصادر / اللغة العربية / الرياضيات) عن طريق التواصل الفردي ونشره على المجموعات.

ومن الجدير بالذكر أن مقياس (LDES-4) يتمتع بخصائص سيكومترية قوية ضمن السياق الفلسطيني، حيث كشفت التحليلات العاملية عن أربعة عوامل رئيسية دعمت البناء العام للمقياس، كما بينت النتائج ارتفاع معاملات الارتباط والثبات (كرونباخ ألفا بين 0.841 و0.984)، مما يدل على اتساق داخلي مرتفع وصلاحية علمية واضحة. كما لم تُسجّل فروق دالة وفقًا لمتغيرات الجنس والعمر والموقع الجغرافي، مما يؤكد استقرار المقياس عبر الفئات. وأظهرت مجالات الرياضيات والتهجئة مستويات صعوبة أعلى نسبيًا مقارنة بالتفكير والكلام. تعزز هذه النتائج موثوقية المقياس وصلاحيته في تشخيص صعوبات التعلم، وتدعمه كأداة فاعلة في التقييم والتخطيط التربوي.

كما يوصى باستخدامه على نطاق أوسع في تقييم صعوبات التعلم لدى الطلبة الفلسطينيين، ويمكن تطوير برامج تدريبية للمعلمين وأخصائيي التربية الخاصة حول كيفية تطبيق المقياس وتفسير نتائجه لضمان أفضل الممارسات في تحديد وتشخيص صعوبات التعلم.

الكلمات المفتاحية: الخصائص السيكومترية؛ البنية العاملية؛ مقياس صعوبات التعلم