

## PERSPECTIVES ON L2 LEARNING AND LEARNING DISABILITIES: INDIVIDUAL DIFFERENCES, DIAGNOSIS, AND TEACHING STRATEGIES

Gli studenti con DA nelle classi L2 mostrano spesso un disturbo, o meglio una difficoltà di apprendimento. Tuttavia, il concetto di DA (*learning disability*, LD, in inglese) è visto in modo diverso negli Stati Uniti e in Europa. Questo articolo si prefigge di spiegare il concetto di DA, esaminare le differenze nella definizione e nella diagnosi per l'identificazione degli studenti con difficoltà di apprendimento, rivedere le ricerche che dimostrano che i problemi di apprendimento in L2 sono problemi di apprendimento *linguistici*, esaminare la relazione tra DA e difficoltà di apprendimento in L2, e riassumere i metodi di insegnamento di L2 basati sulla ricerca destinati agli studenti con difficoltà di apprendimento della lingua.

### Richard L. Sparks | MSJ



Dr. Sparks is Professor Emeritus in Mount St. Joseph's Department of Graduate Education and

Reading Science program. He earned his Ph.D. at the University of Cincinnati, and his research interests include foreign language (L2) learning, L2 aptitude, reading and language disabilities, and learning disabilities/dyslexia.

Dr. Sparks has published extensively in both foreign language and learning disability journals. He has a private practice, serves as a disability consultant, and conducts numerous seminars in the science of reading.

In the U.S., the term *learning disability* (LD) was adopted to describe learners with specific academic deficits thought to be unexpected based on their average, or better, intellectual ability (potential). Although the term LD was developed to explain domain specific deficits, e.g., in reading, math, writing, *learning disability* is sometimes used incorrectly for students with a range of learning problems. As a result, since 1963, the term LD has caused confusion among educators and researchers when distinguishing LD from non-LD students.

In comparison, the study of learning problems in other countries is a more recent development. Although European scholars have investigated how children learn to read, spell, and write their L1 (see Verhoeven & Perfetti, 2017), the study of learning problems has lagged behind the U.S., where research began in the 1950s (Kauffman, Hallahan, & Pullen, 2017). Instead of *learning disabilities*, European countries use generic terms such as *learning differences* and *learning difficulties* to describe students with learning prob-

lems. As a result, educators and researchers in the U.S., Europe, and other countries identify very different individuals as LD. For example, scholars reviewed the LD construct in several different countries and found *widely* divergent views for the definition and diagnosis of LD (Grünke & Cavendish, 2016).

For learning L2s, an important difference between the U.S. and Europe is the cultural context. In the U.S., *far* fewer students participate in L2 education than in Europe and most begin L2 classes in high school compared to primary school in European countries. The U.S. is largely a monolingual society, so most students practice the L2 only in the classroom for one hour each day, 180 days per year. Both high school and university students may have to pass L2 courses to fulfill a requirement, but most are not required to achieve a specific level of fluency or literacy in the L2 to do so, and there is no national standard for L2 proficiency.

The primary aims of this paper are to:  
a) explain the construct of learning *dis-*

ability, b) examine how the differences in definitions and diagnosis cause problems for identification of students with learning problems, c) review briefly research showing that L2 learning problems are, first and foremost, *language* learning problems, d) examine the relationship between LDs and L2 learning problems, and e) summarize L2 teaching methods for students with language learning problems.

## International Perspectives on Learning Problems

A construct has both a conceptual definition and an operational definition. The conceptual definition is what the construct means in theoretical terms, and the operational definition links the concept to the concrete world by specifying how to measure the construct. The conceptual definition for the LD construct in the U.S. is:

“Specific learning disability” means a disorder in one or more of the basic psychological processes involved in understanding or using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculation. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include children who have learning problems which are primarily the result of visual, hearing, or motor handicaps, of mental retardation, or emotional disturbance, or of environmental, cultural, or economic disadvantage (U.S. Office of Education, 1977, p. 65083).

The broad, generic nature of this conceptual definition was problematic for the adoption of an operational definition. By the 1980's, the LD field coalesced around the idea that individuals with LD have normal intellectual ability and LD is as a problem with *academic* skills (Kavale & Forness, 1995; Stanovich, 1991). An operational definition of LD based on discrepancy between scores on standardized measures of intelligence (IQ) and academic achievement was adopted. In the U.S., quantifying discrepancy is straightforward because there are na-

tionally standardized measures of IQ and academic achievement that compare students from kindergarten through adulthood to their same age (grade) peers in the general population. Even though the discrepancy concept was later falsified, the consensus that LD is a problem with *academic* skills was affirmed (Aaron, 1997, Stanovich, 2005).

In Europe, views on learning problems are different. Rather than learning *disability*, terms for learning problems range from specific learning *disorder* to specific learning *differences* to specific learning *difficulties* (Kormos, 2016). European countries have adopted a broad view of learning difficulties extending beyond academic achievement that represent separate diagnostic categories in the U.S. In a recent document published by Erasmus +, the conceptual definition for the specific learning disabilities/difficulties (SpLD) construct is:

Persons with SpLD all show different intellectual and emotional profiles strengths, and weaknesses, learning styles, and life experiences [...]. SpLD can be identified as distinctive patterns of difficulties relating to the processing of information, within a continuum from very mild to severe, which may result in restrictions in literacy, language, number, motor function, short term memory and organizational skills [...]. These form what can be seen as the SpLD umbrella: Dyslexia, Developmental Coordination Disorder/ Dyspraxia, Dyscalculia, ADHD, High Functioning ASD, Specific Language Impairment, Associated Emotional and Social Difficulties (ESD). Persons with SpLD have average or above average cognitive abilities (90 or above measured IQ) [...]. [[www.euspld.com](http://www.euspld.com), retrieved on 3/24/20].

This definition goes well beyond the notion of specific academic deficits<sup>1</sup>. According to Kormos, operational definitions (diagnostic criteria) for SpLD used in Europe are both qualitative (input from teachers, parents, students) and quantitative (test scores). But, unlike the U.S., standardized tests comparing individuals to their same age (grade) peers are not readily available.

<sup>1</sup> Three specific differences include: *Dyslexia* is Specific Learning Disorder in Reading (315.00); *Dyscalculia* is Specific Learning Disorder in Math (315.1); and Coordination Disorder overlaps with *Dyspraxia* and called Developmental Coordination Disorder (315.4). There are also four different types of ADHD, three different types of language impairments, and an array of social/emotional, and behavioral disorders in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (American Psychiatric Association, 2013)

## However, research has not demonstrated that L2 achievement can be increased by lowering anxiety or increasing motivation for L2 learning

### Operational Definitions: Differences, Difficulties, or Disabilities?

The descriptions of the U.S. and European contexts demonstrate considerable variation in the conceptual definitions for the LD and SpLD constructs. Both LD and SpLD include individuals with school learning problems. But in the U.S., LDs are understood largely as academic deficits in individuals with normal intellectual ability potential. In Europe, SpLD not only includes individuals with academic deficits, but also students with problems unrelated to academics (e.g., ADHD, motor coordination)<sup>2</sup>. The heterogeneity in the conceptual definition for SpLD leads to the queries about how SpLD students are distinguished from non-SpLD students, and how SpLD students in Europe are distinguished from LD students in the U.S.

The term learning *differences* (SpLD) raises the question, *different from what or whom?* To identify an individual with a learning difference, there must be an operational definition (measurable standard) on which to base difference. A related question is whether *differences* refer to intra-individual or inter-individual differences. If the learning difference is intra-individual, then *each* individual would be different because *everyone* displays learning differences (e.g., strong math, weak reading). But, if the learning difference is inter-individual (between or

among individuals), then a measurable standard (operational definition) from which to judge difference is required. The term learning *difficulties* raises the same question: Difficulty when compared to what or whom? To determine difficulty, there must be a measurable standard (operational definition) on which a judgement is based. If not, learning difficulty can encompass *all* individuals because anyone can display difficulty with learning one or more skill(s). Likewise, an individual could display learning difficulty if his/her skills are consistently in the low average range along the normal distribution. The adoption of an operational definition for SpLD with a measurable standard is difficult because standardized measures of academic skills comparing individuals to their same age (grade) peers are generally unavailable in many European countries.

The term learning *disability* (LD) prompts the same question: *Disabled compared to what or whom?* In the U.S., the operational definition is written to include individuals who exhibit *below average* functioning, i.e., a *deficit*, in a domain specific skill, e.g., reading. An individual with a deficit (below average skill) exhibits a *substantial impairment* (minimum 1.0 SD below the mean) compared to same age (grade) peers in the general population on a standardized testing measure. Figure 1 depicts the profile of an individual with a domain specific deficit, i.e., substantial impairment in reading. Here, the operational definition answers the question of comparison to *what* (a measurable standard) and to *whom* (same age or grade peers in the general population). Qualitatively, this individual should have a record of poor grades, low scores on group standardized achievement measures, and treatment record, e.g., tutoring. But, s/he should also meet the operational definition for LD: a substantial (quantitative) impairment in a domain specific skill compared to same age (grade) peers in the general population on standardized testing measures. Diagnosis and substantial impairment are related, but separate, issues, i.e., a diagnosis (conceptual definition) from a professional is not necessarily a disability (substantial impairment). In the U.S., the Americans with Disabilities Act (ADA, 1990) and the Americans with Disabilities Amendments Act (ADAAA, 2008) maintained the “average person” standard for determining substantial impairment.

<sup>2</sup> To be fair, the notion of “concept creep,” or expanding notions of harm (see Haslam, 2016), has affected the heterogeneity of LD and SpLD populations. For example, studies with “dyslexic” populations find a wide range of criteria used to include and exclude participants (Lopes, Gomes, Oliveira, & Elliott, 2020). In a review of the postsecondary literature on LD diagnosis, Sparks and Lovett (2009) found 23 different, and often conflicting, criteria by which college students had been classified as LD.

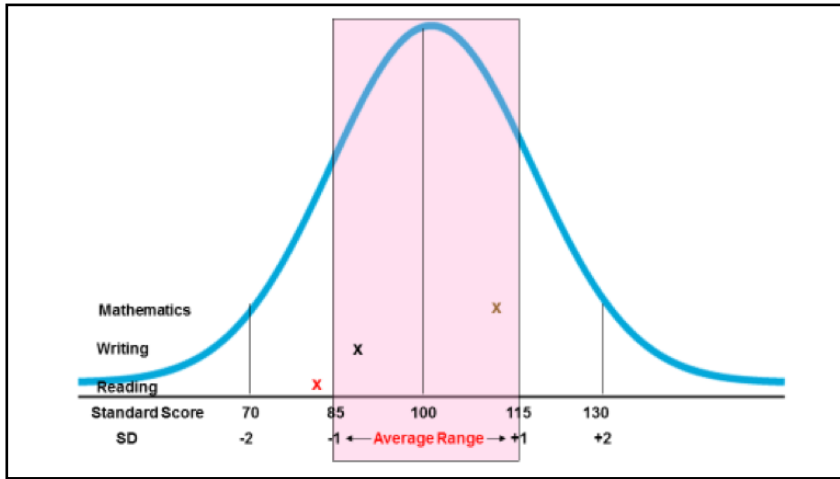


Figure 1: Example of Student with Learning Disability with a Substantial Impairment in a Specific Domain (Reading)

## Diagnosis of Learning Disabilities

The inclusive nature of the SpLD construct necessarily creates problems for educators and researchers. The two populations--LD and SpLD--are similar, that is, issues with school learning. In practice, there may be overlap in their school learning issues, but the two populations may also have distinctly different problems. In theory, the diagnostic criteria (operational definition) for SpLD include both subjective (qualitative) information and objective data (test scores). In practice, there are not quantitative standards for SpLD diagnosis, in part, because European countries have not developed individualized, standardized tests that yield objective data comparing students academically to their same age (grade) peers in the general population. Inevitably, SpLD populations represent a cross-section of learners with diverse problems.

The broad conceptual definition for LD is also problematic. In the U.S., the discrepancy concept (IQ vs. achievement) was adopted as the operational definition for LD, and discrepancy was codified in DSM-IV (American Psychiatric Association, 1994). The discrepancy criterion was based largely on the faulty assumptions that IQ revealed "potential" to learn and individuals should perform in all academic skills at a level consistent with their IQ score. DSM-IV criteria for Reading, Math, and Writing Disorders included both IQ-achievement discrepancy criterion of 2.0 SDs (Criterion A) and a criterion that required impairments in academic

achievement (Criterion B). But, Criterion B was ignored for many reasons including the belief that IQ scores measured potential to learn, the ease of measuring discrepancy, the *normal* presence of performance differences in most individuals (Binder, Iverson, & Brooks, 2009), and the infrequency of substantial impairments in individuals with average to above average IQs.

Discrepancy remained the formal operational definition for LD from the 1980s to 2013. But, as evidence falsifying the discrepancy concept accumulated (see Stanovich, 2005; Stuebing et al., 2002), DSM-5 discarded discrepancy and adopted rigorous criteria for the operational definition of LD (American Psychiatric Association, 2013). DSM-5 criteria stipulate that an individual display *substantial impairments* in academic skills of 1.0-1.5 SD below the mean score of their same age peers in the general population on standardized achievement tests of reading, math, or writing *without regard to IQ*, i.e., below average achievement ( $SS \leq 85$ ,  $\leq 15^{\text{th}}$  percentile). An individual who exhibits a large IQ-achievement discrepancy but no academic deficits should not be diagnosed as LD. Diagnosticians should consider qualitative information, e.g., poor grades, but there must be substantial impairments in an academic domain. To meet the operational definition for proper classification as LD, for example in reading, an individual should display scores on standardized testing measures similar to the profile in Figure 1.

In sum, the inclusive nature of the conceptual definitions for the SpLD and LD constructs is problematic for developing a formal operational definition<sup>3</sup>. But, unlike the SpLD construct, DSM-5 criteria for LD have operationalized substantial impairment as below average skills (1.0-1.5 *SD* below the mean) in academic skills compared to the average person of the same age/grade in the general population on standardized measures of achievement. Unlike the SpLD construct, DSM-5 criteria answer the questions of *comparison to what* (a measurable standard, or substantial impairment) and *comparison to whom* (same age or grade peers in the general population) for LD.

Whether classified as SpLD or LD, will these individuals have problems learning another language? In the next section, the author examines connections between L1 and L2 learning skills, research with LDs and L2 learning, and beliefs about L2 learning and LDs. Most of the research on L2 learning and students with disabilities has been conducted in the U.S., so the term LD with its operational definition of academic (substantial) impairment is used.

have a common underlying foundation) and Linguistic Threshold Hypothesis (L2 proficiency attainment is moderated by one's level of attainment in L1).

Since 1991, their studies with U.S. L2 learners have shown that: a) there are strong relationships between early L1 skills, L2 aptitude, and later L2 achievement, b) L1 and L2 learning depend on similar language learning components in both languages, c) L2 achievement is moderated by students' level of L1 skills, d) there are normal IDs in L1 skills and L2 aptitude among L2 learners, e) IDs in L1 skills are apparent by kindergarten and are related to both L2 aptitude and proficiency several years later, f) L1 skills and L2 aptitude explain significant variance in L2 proficiency, and g) affective differences are linked to differences in L1 skills and L2 aptitude. Their longitudinal studies have found long-term, cross linguistic transfer of early L1 skills to later L2 aptitude and L2 proficiency, and that IDs in L2 achievement reflect IDs in L1 skills. (For a complete review, see Sparks, 2012, 2019.) In a series of studies published in the *Journal of Learning Disabilities*, Sparks et al. (1999a, 1999b, 2002, 2003) found that many students experience problems with L2 learning, but LD students in L2 courses rarely exhibit below average L1 skills. Researchers have also found strong relationships between L1 skills and L2 learning in other languages and in particular with English Language Learners (ELLs) (e.g., see Sparks, Patton, & Luebbers, 2019).

Sparks et al.'s studies with the LCDH and the premise that L2 learning is the learning of *language*, Skehan's notion that language is special for L2 learning, and Cummins' hypotheses prepared the foundation for studying U.S. students classified as LD in L2 courses.

### Learning Disabilities (LD) and L2 Learning

The false assumptions about discrepancy for LD diagnosis described earlier were problematic for studying LDs and L2 learning. Based on case studies of individual learners and personal anecdotes, educators assumed that LD students would have "special difficulties" with L2 learning (Difino & Lombardino, 2004), accepted the idea of a "disability" for L2 learning specific to LD students

## At this time, there is little or no evidence that accommodations serve to increase the ability to use the L2.

### Connections between L1-L2 Learning

For many years, the author and colleagues conducted research on L1-L2 connections guided by their Linguistic Coding Differences Hypothesis (LCDH) (Sparks, 1995; Sparks & Ganschow, 1993). The LCDH proposes that: a) the primary causal factors in more and less successful L2 learning are linguistic, b) high- and low-achieving L2 learners have individual differences (IDs) that are language-related, and c) language-related IDs explain their ultimate attainment in L2 skills. They posit that since L2 learning is the learning of *language*, the skills necessary for L2 learning are necessarily language-related. Like Skehan (1998), they hold that language is special and qualitatively different from other cognitive skills. Their model is similar to Cummins' (1979) Linguistic Interdependence Hypothesis (L1 and L2

<sup>3</sup> In a recent paper, Kormos (2017) cites DSM-5 criteria for the conceptual definition, i.e., academic skills must be "substantially and quantifiably below those expected for the individual's chronological age..." (p. 67). However, she does not acknowledge the *numerical* criterion for the operational definition in the manual, i.e., the individual's skills must be "...at least 1.5 standard deviations [SD] below the population mean for age...standard score of 78 or less...which is below the 7<sup>th</sup> percentile...for the greatest diagnostic certainty" (p. 69).

(Grigorenko, 2002), and recommended course substitutions/waivers for schools' L2 requirements (Shaw, 1999). However, these premises have not been supported by empirical evidence (see Sparks, 2006). Unfortunately by 2000, it became popular for U.S. students diagnosed as LD to receive course substitutions for and/or waivers from an institution's L2 requirement. (In the U.S., students are often excused from L2 classes if educators decide they might do poorly, not because they demonstrate proficiency in a L2.)

Since 1991, Sparks et al. have conducted numerous studies with low-achieving students enrolled in L2 courses classified as LD or non-LD. All of these studies showed that there were no significant differences in L1 skills, L2 aptitude, L1 cognitive skills (IQ, memory), and L2 proficiency and achievement outcomes between the two groups (see Sparks, 2009). Despite the evidence, the idea of a 'disability' for learning L2s became acceptable in the U.S. and use of course substitutions and waivers increased. Sparks et al. then embarked on a series of studies to examine the profiles of postsecondary LD students who received course substitutions and those who passed L2 courses. These studies showed that there were no significant differences in IQ, L1 skills, L2 aptitude, and college entrance exam scores between the two groups (see Sparks, 2006). In large part, the aforementioned findings occurred because the LD students were diagnosed based on discrepancy criterion, i.e., IQ-achievement discrepancies. However, they did not exhibit *deficits*, i.e., substantial impairments, in academic skills, that is, their reading, writing, and language skills were in the average range. In their studies with secondary and post-secondary groups, the authors found that most LD students passed L2 courses with average or better course grades. These findings prompted Sparks (2016) to conclude educators' assumptions that LD students will have "special difficulties" with L2 learning and that there is a special "disability" for L2 learning are among the many myths associated with the LD concept and L2 learning. Instead, L2 learning problems are best predicted by L1 learning problems in students' *oral and written language* skills, specifically when L1 skills are below average, i.e.,  $<1.0$  SD below the mean, compared to same age (grade) peers in the general population.

## Evidence-Based Teaching Strategies for Language Learning Problems

Ganschow and Sparks (2001) summarized pedagogical methods for teaching L2s to students with language learning problems. At that time, L2 educators in the U.S. had given little attention to individuals with language learning problems. In the 1990s, the only pedagogical method proposed for teaching L2s to students with language learning problems came from special educators (Sparks, Ganschow, Kenneweg, & Miller, 1991; Sparks & Miller, 2000). The multisensory structured language approach (MSL) had been used for many years to teach L1 reading, spelling, and writing to students with L1 learning difficulties (Gillingham & Stillman, 1960). This approach directly and explicitly teaches the phonological/orthographic (sound, sound-symbol), syntactic (grammar), and morphological systems of a language, and emphasizes skill development (vocabulary) and conscious attention to language structures. The components of the language are sequenced from easy to difficult, and students master easier concepts before moving to new concepts. Based on the premise that L2 learning is the learning of *language*, Sparks et al. speculated that teaching the language components of the target L2 in a direct and explicit manner would be beneficial to L2 learners with L1 problems. Through the 1990s, they conducted a series of studies with U.S. high school students, which showed that low-achieving (at-risk, LD) L2 learners enrolled in Spanish and taught with the MSL approach in Spanish made significant gains in their L1 skills and L2 aptitude (Ganschow & Sparks, 1995; Sparks, Ganschow, Pohlman et al., 1992; Sparks & Ganschow, 1993b), and achieved expected levels of oral and written proficiency in Spanish after two years of L2 classes (Sparks, Ganschow, Artzer, & Patton, 1997). In a longitudinal study, Sparks et al. compared average/high-achieving L2 learners in regular sections of Spanish classes with low-achieving/LD students in special sections of Spanish taught with the MSL approach (Sparks, Artzer, Patton, Ganschow et al., 1998). While findings revealed significant differences in the groups' pre- and post-test L1 skills, there were no significant differences between the groups' L2 oral and written Spanish proficiency after two years of L2 courses.

# The only pedagogical approaches found to be helpful for teaching L2s to students with language learning problems are those that teach explicitly the language skills necessary to become literate and fluent in a L2.

More recently, L2 researchers in Europe have conducted studies using the MSL approach with L2 learners classified as dyslexic in L1. In a small study with Polish students learning English, Nijkowska (2008) found that dyslexic students taught with MSL made significant gains in English word reading and spelling. Pfenninger (2015) used the MSL approach in a Swiss context with students identified as dyslexic and non-dyslexic and found that MSL instruction was beneficial for both groups in improving their German L2 and English L3. Nijkowska (2013) has also reported studies demonstrating the effectiveness of this approach.

Unfortunately, knowledge about teaching L2s to students with language learning problems has stagnated. Instead, both L2 and special educators have proposed pedagogical techniques based on theories unrelated to language difficulties. For example, some educators hypothesize that affective characteristics, such as motivation and anxiety, are causal factors in poor L2 learning. However, research has not demonstrated that L2 achievement can be increased by lowering anxiety or increasing motivation for L2 learning (see Sparks, Patton, & Luebbers, 2018). Other L2 educators have speculated that teaching language learning strategies and teaching to learning styles are important for successful L2 learning. However, research has not supported strategy instruction for increasing L2 proficiency (Dörnyei, 2005), and learning styles theory (e.g., auditory vs. visual) has been *thoroughly* debunked by researchers (e.g., see Pashler, McDaniel, Rohrer, & Bjork, 2009; Sparks, 2006b).

Largely as a result of the inclusion movement in the U.S. and Europe, the standard practice for assisting poor L2 learners has been the use of accom-

modations. Accommodations are modifications and adjustments to the tasks, environments, and usual practices that enable individuals with disabilities to participate in an academic program. The primary accommodation used by LD students in the U.S. is extended time on tests, while some students are granted use of a computer with spellcheck, and other students may request a reader or scribe, oral directions, and a separate testing room (Lovett & Lewandowski, 2015; see also Kormos and Smith, 2012). Accommodations and course modifications have become accepted practice in the U.S. (because of ADA) and in Europe, Australia and some Canadian provinces [because of the Children and Families Act (2014)]. However, accommodations and course modifications are *not* designed to assure that students master course material, including the mastery of a L2. Instead, these practices are designed to allow *participation* in courses with non-disabled peers using accommodations. At this time, there is little or no evidence that accommodations serve to increase the ability to use the L2.

For many years, Sparks et al. have recommended that L2 educators develop methods that focus on teaching the *language* skills necessary to develop proficiency in L2. For example, students with language learning problems will need *direct* instruction in the phonology (sound and sound-symbol), grammar, morphology, and vocabulary of the target language. Instead of focusing on teaching language skills, L2 educators have proposed pedagogies based on hypotheses for L2 problems unrelated to learning language. Thus far, the only pedagogical approaches found to be helpful for teaching L2s to students with language learning problems are those that teach *explicitly* the language skills necessary to become literate and fluent in a L2.

## Conclusion

If progress is to be made in identifying and teaching L2s to students with language learning problems at all levels of schooling, L2 educators and LD specialists in different cultural contexts must agree on an operational definition for LD (and SpLD). Then, they should develop evidence-based approaches for teaching of L2s to students with language learning problems.

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