

Comprehensive Remedial Approaches and Strategic Instructional Interventions Targeting Learning Disabilities at the Primary Education Level

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ABSTRACT:

This research examines the impact of overall remedial efforts and planned teaching interventions in the rectification of learning disabilities at the elementary level. Based on a quantitative descriptive research approach, 340 teachers at the elementary level were measured with a valid and reliable self-conceived questionnaire. Descriptive as well as inferential statistical analysis identified that teachers in general had positive attitudes towards the interventions, i.e., early identification, individualized instruction, multi-sensory strategies, and assistive aids. Additionally, it was found that teachers' perception differed significantly by designation, posting location, age, qualifications, and experience, and with better perceptions reported by older, rural, and experienced staff. These differences indicate the effects of demographic and setting factors on teachers' ratings of intervention effectiveness. The research concludes that although good practices are already being followed, there is a requirement of resource distribution on an equitable basis and continuous professional development to authenticate that the same is implemented in every education setting uniformly. The results are useful to further develop inclusive education by providing policy guidance for the benefit of learners with disabilities.

Keywords: Learning disabilities, primary education, remedial approaches, strategic instructional interventions, teacher perceptions, inclusive education

Introduction

Primary school students' learning disabilities (LDs) pose a significant hurdle to educational equality and academic success globally. They most often have a neurological cause, which affects the manner in which individuals process information and learn basic scholastic competencies such as reading, writing, speaking,

and mathematical reasoning (Khan et al., 2024). At the foundational level, where initial proficiency is formed, LDs can generate extreme inconsistencies in scholastic attainment and result in students lagging behind peers. Nguyen (2024) indicates that early years of schooling are not only when cognitive development is most crucial but also the best time to step into LDs

before they have become entrenched long-standing academic shortcomings. The recurring scholastic difficulties of LD students can further result in behavior, social, and emotional issues, and these augment the intensity of learning. Therefore, LD during the elementary phase requires early detection and multi-faceted intervention techniques responsive to diversity in learners' intelligence.

In the last decades, more and more emphasis has been placed on the initiation and implementation of remedial comprehensive approaches and strategic instruction interventions, particularly for LD students. Remedial instructional reactions towards this population must go beyond traditional pedagogies and embrace systematic, individualized, and research-based practices. Alamri (2024) further contributes that remedial education works best if it is of high intensity and early intervention since it minimizes the gap in learning to a great extent. Strategic interventions multi-sensory instruction (Mohamed, 2021), response to intervention models (Alahmari, 2019), assistive technology tools (Hess, 2023), and schema-based mathematics instruction (Hammed, 2022) create more opportunities for scaffolding students' learning who are unsuccessful in regular classroom learning. Directions of change for the provision of special education programs: Universal Design for Learning (UDL), based on adaptive teaching to address various needs of learners, also promotes placing emphasis on inclusivity and responsiveness in intervention design (Zhang et al., 2022). Still, the application of interventions relies on collaborative planning with experienced staff, support staff, and families, and systemic support through policy and resource redistribution.

In view of the prevalence of LDs and their eventual impact, a need still remains to research, codify, and test remedial and strategic instruction techniques within the curriculum of elementary school. Although many studies have observed the merit of early intervention, multi-sensory, and individualized instruction, little research has incorporated these techniques into

a comprehensive paradigm for different instructional environments. Such research is hence based on filling this gap through the critical examination of a range of remedial and teaching interventions that are currently being used in an effort to address LDs in primary schools. They include empirical justification for the study, which is based on offering teachers, policymakers, and educational psychologists a condensed body of information on effective intervention models that can be designed and adapted to the various learning contexts. Whereas both the theoretization and actual implementation of such methods are in focus, this research strives to contribute meaningfully to the discussion in inclusive education in addition to student empowerment of learning-disabled students.

Objective of Study

To evaluate the effectiveness of comprehensive remedial approaches and strategic instructional interventions in addressing learning disabilities at the primary education level.

Literature Review

Learning disabilities (LDs) of primary school students are of significant concern to educators, psychologists, and policymakers because of their influence on academic success and social progress. LDs refer to a broad spectrum of cognitive and neurodevelopmental impairments that disrupt basic learning skills like reading, writing, and math (Khan, 2024). Primary education is the initial phase of educational learning, and learning disability coping deficits during this phase can translate into lifelong academic underachievement and social isolation (Nguyen, 2024). Hence, a call for systematic remedial measures and strategic instructional strategies has attracted more attention in recent educational research.

Remedial education or compensatory education is a fundamental response to learning disabilities. It encompasses direct instruction that is focused on leading LD students to the expectation of age-appropriate academic standards. Studies have long illustrated early and intensive remedial interventions to produce

more positive results than delayed intervention (Alamri, 2024). For instance, Zijlstra et al. (2021) presented evidence that early reading disorder intervention significantly enhanced decoding and reading comprehension skills, mitigating the long-term impact of dyslexia. These results substantiate the hypothesis that remedial instruction can mitigate the academic dangers of LDs when applied early.

Strategic instructional interventions differ from typical teacher practices in that they are systematic, direct, and individualized. Interventions are fashioned on the basis of students' distinctive profiles of cognition so that teaching can be concentrated on certain deficits and draw on relative strengths (Mitchell & Sutherland, 2020). A prevalent strategic intervention is the use of multi-sensory learning strategies that address auditory, visual, and kinesthetic modalities all at once. Mohamed's (2021) study showed that multi-sensory strategies increase retention by a considerable margin as well as attention among dyslexic and dysgraphic children. They are supported by the principles of Universal Design for Learning (UDL) that advocate for flexible teaching to meet diverse learner needs (Zhang et al., 2022).

Furthermore, Response to Intervention (RTI) has emerged as a prevailing model of identification and support for LD students. RTI consists of a number of tiers of progressively high-intensity interventions which start with high-quality teaching in the classroom and escalate to individualized specialized intervention (Alahmari, 2019). Research attests to the effectiveness of RTI in both identifying students with LDs and in providing effective interventions before special education referral. The model stresses continuous observation of progress, evidence-based decision-making, and the employment of evidence-based practice (Coleman, 2025). All these aspects make RTI a central part of thorough remedial procedures in the primary school system.

The integration of assistive technology with remedial and strategic approaches has also proved to be effective. Assistive aids like text-to-

speech programs, audiobooks, and interactive learning programs have been proven to optimize access to the curriculum content and additional student learning by students with LDs (Hess, 2023). For example, Marino, Coyne, and Dunn (2010) discovered students with reading disabilities had enhanced comprehension when they used digital graphic organizers and audio texts. Assistive technologies not only ensure academic achievement but also enhance students' motivation and autonomy, the two key variables long undermined in LD students.

In math education, strategic interventions such as Concrete-Representational-Abstract (CRA) instruction and schema-based instruction have been greatly beneficial to dyscalculic and other math learning disabled students (Hammed, 2022). The interventions offer systematic frameworks that render abstract ideas more concrete by using manipulatives, visualizations, and outlined problem-solving processes. Hughes (2020) further noted that schema-based instruction enhances problem-solving abilities through educating students on problem type recognition and utilizing related solution strategies to minimize cognitive load and uncertainty.

Language disability disorders like dyslexia and expressive language disorder need to be addressed with specific interventions focusing on phonemic awareness, vocabulary building, and oral language. For example, the Orton-Gillingham method has been effective in enhancing the fluency of reading and decoding skills of dyslexic children (Stevens et al., 2021). This systematic, explicit, and phonics-oriented approach incorporates visual, auditory, and kinaesthetic learning and is particularly suited to primary-aged children who find it difficult to cope with traditional literacy teaching. Similarly, narrative intervention strategies, by way of structured narrative and language modeling, have proven effective in optimizing preschool children's express language ability (Spencer & Petersen, 2020).

Teacher training and staff development are strong determinants of the success of remedial

and strategic intervention. Research indicates that primary school teachers in the majority indicate a feeling of under-preparation to educate LD pupils because they are not specially trained (Mutuku, 2023). When educators are continually trained through evidence-based practices, such as differentiated instruction and formative assessment, their capacity to instruct struggling learners is significantly improved (Meutstege et al., 2023). Special education consultation and co-teaching are some of the team interventions that increase intervention effectiveness and intervention fidelity.

Parent involvement has also been mentioned as a very important component of effective remediation. Research has established that when parents are involved in their child's learning, particularly through organized home-based learning and communication with teachers, intervention outcomes are greatly enhanced (Axford et al., 2019). Home-school partnership creates a sustained help system that is supportive of methods used in the classroom brought home. A dual-context model is especially its weight in gold value when sustaining academic gains achieved with school-based interventions.

Socioeconomic status and ethnicity are important factors in learning disability identification and remediation. Poor children also face a number of risk factors that contribute to the LD challenge, including limited access to early identification, educational intervention, and support services (Paik et al., 2022). Culturally responsive instruction and fair access to remediation programs are thus critical in providing all students with adequate and effective intervention irrespective of their background (Howard, 2021). Omission of the contextual factors could lead to disproportionate minority representation of students in special education.

Collaborative problem-solving approaches, like the Individualized Education Plan (IEP) process, offer structured means for adjusting instruction and services to meet the unique needs of LD students. The IEP process

necessitates collaboration from teachers, specialists, and families to develop an integrated educational plan that includes the goals, strategies, and criteria for assessment (Siegel, 2020). The quality of assessment, goal clarity, and implementation fidelity, however, are the determinants of the effectiveness of IEPs. According to research conducted by Harmon et al. (2020), where IEPs are appropriately paired with learners' cognitive profiles, academic as well as behavioral gains are observed to follow.

Peer-mediated instruction is also an intervention strategy that has been found beneficial in individuals with LDs. Peer tutoring, cooperative learning, and cross-age mentoring were observed to improve academic performance as well as social status (Travers & Carter, 2022). They employ peer support to enhance learning, offer models of academic accomplishment, and enhance collaborative problem-solving. They also establish a positive classroom environment that minimizes stigma generally related to special education assistance.

The roles of psychologists and school learning specialists are most significant in offering intervention planning and diagnostic testing. Psychoeducational evaluation offers comprehensive identification of the exact nature of learning disability and impacts the choice of appropriate interventions (Andrews & Syeda, 2017). Progress monitoring, strategy adjustments, and closing communication gaps between parties are also crucial roles of psychologists. Interdisciplinary collaboration among teachers, specialists, and families provides an integrated framework of support that maximizes the potential for constructive educational outcomes for LD students.

In spite of several advancements, there are some challenges in the delivery of quality remedial and strategic interventions. These include scarcity of funds, large number of students in a class, limited teacher training, and poor monitoring systems (McInerney et al., 2014). To overcome these barriers, there have to be systemic reforms at policy and administrative levels. For instance, more investment in special education

infrastructure, teacher certification courses, and inclusive curriculum development can substantially improve the delivery of services to students with LDs.

Technological progress and cognitive psychology developments over the last several decades have shed more light on learning disability mechanisms that helped more accurate and efficient interventions. Structural and functional variations of reading and mathematics processing regions in children with LDs, for instance, have been uncovered by brain imaging investigations (De Smedt et al., 2019). These results underscore the imperative for interventions that are both pedagogically sound and neurodevelopmentally driven. This scientific backdrop governs our capacity to create interventions that are evidence-based and neurobiologically driven.

Research Methodology

Research Design

A quantitative and descriptive research design was used in this study to assess the impact of remedial methods and strategic instruction interventions for learning disabilities at the primary school level. The descriptive design allowed for planned data collection and analysis from teachers to determine practices, issues, and results associated with instructing students with learning disabilities.

Research Population

The research population was made up of teachers who work directly with students who have learning disabilities in primary schools. The teachers were chosen for their firsthand experience in applying remedial strategies and specialized instructional techniques to assist learners with cognitive and academic difficulties.

Research Sample and Sampling Technique

There are 340 teachers who were chosen as the research sample employing the simple random sampling method. Through this method, each

teacher in the target population had an equal chance of being chosen, thus improving representativeness and generalizability of findings.

Research Tool

Data was gathered through a self-constructed questionnaire that was framed through an extensive literature review. The questionnaire contained closed-ended and scaled questions to ascertain teachers' views, experience, and judgments of remedial and instructional techniques for learners with learning disabilities.

Validity and Reliability

The questionnaire was expert-checked for content validity by special education, educational psychology, and instructional design experts. Feedback was included to enhance clarity, relevance, and completeness. To ascertain reliability, a pilot study was administered among 30 teachers, and the internal consistency of the instrument was assessed using Cronbach's Alpha, with a coefficient of 0.86, reflecting high reliability.

Data Collection

Physical distribution of questionnaires and online administration through a Google Form link were employed for data collection. The use of two strategies enhanced access to the survey and made responses more forthcoming by providing for participants' choices and locations.

Data Analysis

The data collected were analyzed using both descriptive and inferential statistical methods with the help of the Statistical Package for Social Sciences (SPSS). Descriptive statistics, including frequencies, means, and standard deviations, were used to summarize the data set. To examine relationships and identify significant differences among variables, inferential techniques such as t-tests and ANOVA were applied.

Table 1: *Demographic Profile of Respondents*

Title	Description	Frequency	Percentage (%)
Gender	Male	118	34.7%
	Female	222	65.3%
		340	100%
Age of Respondents	21-30 Y	6	1.8%
	31-40 Y	100	29.4%
	41-50 Y	191	56.2%
	51-60 Y	43	12.6%
		340	100%
Designation	Senior Teacher	190	55.9%
	Junior Teacher	150	44.1%
		340	100%
Qualification	Bachelor	97	28.5%
	Master	232	68.2%
	PHD	11	3.2%
		340	100%
Place of Posting	School	167	49.1%
	Center	173	50.9%
		340	100%
Area of Posting	Rural	58	17.1%
	Urban	282	82.9%
		340	100%
Experience	1-5 Y	70	20.6%
	6-10 Y	161	47.4%
	11-15 Y	94	27.6%
	>15 Y	15	4.4%
		340	100%

The demographic breakdown of the study sample, 340 respondents, shows that the teaching staff is predominantly female (65.3%) versus male (34.7%). The largest number of respondents are between the 41–50 age group (56.2%), suggesting an experienced and mature group, while just 1.8% belong to the youngest age group (21–30 years). Senior teachers constitute a marginal majority at 55.9%, while junior teachers make up 44.1%. Educationally, the majority of teachers are in possession of a Bachelor's degree (28.5%), then Master's (68.2%), with a minimal portion possessing PhDs (3.2%). In terms of their work setting, the

respondents were nearly equally divided between postings in schools (49.1%) and centers (50.9%). Yet, there is strong urban predominance, as 82.9% are posted in urban areas, compared to only 17.1% in rural areas. Experience-wise, the highest share (47.4%) possesses 6–10 years of teaching experience, trailed by 1–5 years (20.6%) and 11–15 years (27.6%), with just 4.4% possessing more than 15 years of experience. This profile indicates a professionally qualified and moderately experienced teacher population, which is mainly urban-based and actively engaged in primary school settings.

Table 2: *Respondents' Views on Remedial Approaches and Strategic Instructional Interventions*

Sr.	Statements of Questions			SA	A	UD	DA	SDA	M	SD
1	Comprehensive	remedial	instruction	193	122	20	5	0	4.48	0.68
	significantly	improves	academic	(57%)	(36%)	(6%)	(1%)	(0%)		

	performance in students with learning disabilities.							
2	Early identification and intervention are crucial for effectively supporting students with learning disabilities.	175 (51%)	151 (44%)	14 (4%)	0 (0%)	0 (0%)	4.47	0.58
3	Strategic instructional interventions such as individualized teaching plans are effective in addressing diverse learner needs.	143 (42%)	183 (54%)	12 (4%)	0 (0%)	2 (1%)	4.37	0.61
4	Multi-sensory instructional strategies improve engagement and learning outcomes for students with LDs.	161 (47%)	151 (44%)	8 (2%)	15 (4%)	5 (1%)	4.32	0.84
5	Use of assistive technologies (e.g., audiobooks, reading software) enhances classroom learning for students with LDs.	107 (31%)	176 (52%)	40 (12%)	17 (5%)	0 (0%)	4.10	0.79
6	Structured remedial programs are well-integrated into the school curriculum to support learners with LDs.	127 (37%)	145 (43%)	48 (14%)	20 (6%)	0 (0%)	4.11	0.86
7	Differentiated instruction is effectively used in my school to meet the needs of students with learning disabilities.	127 (37%)	164 (48%)	39 (11%)	5 (1%)	5 (1%)	4.19	0.80
8	Remedial strategies in reading and writing have led to observable improvements in students' academic performance.	129 (38%)	176 (52%)	27 (8%)	3 (1%)	5 (1%)	4.24	0.76
9	Instructional interventions in mathematics have been effective in reducing learning gaps in students with LDs.	113 (33%)	176 (52%)	36 (11%)	0 (0%)	15 (4%)	4.09	0.91
10	Professional training has adequately prepared me to implement remedial interventions for students with learning disabilities.	142 (42%)	143 (42%)	25 (7%)	20 (6%)	10 (3%)	4.14	0.99
11	Collaboration with special educators or psychologists improves the success of intervention strategies for students with LDs.	137 (40%)	151 (44%)	39 (11%)	5 (1%)	8 (2%)	4.19	0.87
12	Parent involvement contributes positively to the outcomes of strategic interventions for students with learning disabilities.	113 (33%)	150 (44%)	52 (15%)	20 (6%)	5 (1%)	4.02	0.92
13	My school regularly evaluates and adjusts intervention strategies based on student progress and data.	107 (31%)	178 (52%)	37 (11%)	15 (4%)	3 (1%)	4.09	0.82
14	Response to Intervention (RTI) is an effective model for identifying and supporting students with LDs in primary education.	136 (40%)	163 (48%)	26 (8%)	15 (4%)	0 (0%)	4.24	0.77
15	The current intervention strategies used in my school address both academic and	144 (42%)	156 (46%)	30 (9%)	10 (3%)	0 (0%)	4.28	0.74

	behavioral challenges associated with LDs.							
16	I believe that combining remedial approaches with strategic instruction yields better outcomes than using either approach alone.	117 (34%)	187 (55%)	24 (7%)	12 (4%)	0 (0%)	4.20	0.72
Overall							4.22	0.20

The information presented in Table 2 offers revealing evidence on teachers' views on the effectiveness of extensive remedial strategies and strategic teaching interventions for children with learning disabilities (LDs) at the elementary level. On average, the answers reveal a robust agreement for all 16 items with extremely high mean scores between 4.02 and 4.48, suggesting a positive consensus among teachers. Of particular interest, the top-ranked item ($M = 4.48$) reflects a commitment to the understanding that extensive remedial instruction has a profound impact on academic performance, followed closely by other primary areas—early identification ($M = 4.47$), individualized teaching plans ($M = 4.37$), and

multi-sensory approaches ($M = 4.32$)—also strongly supported. Teachers also valued assistive technology, differentiation, collaboration with specialists, and parent involvement as essential elements of effective interventions. The general trend of the responses is that teachers view existing remedial and strategic approaches as mostly effective, but variation in standard deviations—specifically in dimensions such as professional training ($SD = 0.99$) and curriculum integration ($SD = 0.86$)—indicates possible variation in implementation or availability of resources within schools. This highlights the need for uniform teacher training and systematic support to guarantee uniform success of these interventions.

Table 3: *Gender-Based Comparison of Perceptions (Independent Samples t-test)*

Gender	N	Mean	SD	df	t	Sig.
Male	118	67.67	6.62	338	0.31	0.755
Female	222	67.44	6.50			

Table 3 displays the outcome of an independent samples t-test that was used to check whether there is any significant difference in perceptions of effectiveness of remedial methods and instructional interventions depending on gender. The male ($M = 67.67$, $SD = 6.62$) and female ($M = 67.44$, $SD = 6.50$) participants have mean scores that are almost the same, and since the t-

value is 0.31 while the significance level is 0.755, it reflects that there exists no statistically significant difference between the two groups. This indicates that male and female teachers have the same perspectives on the effectiveness of strategies employed to support students with learning disabilities at the primary education level.

Table 4: *Comparison Based on Designation (Independent Samples t-test)*

Designation	N	Mean	SD	df	t	Sig.
Senior Teacher	190	68.39	5.85	338	2.80	0.005
Junior Teacher	150	66.41	7.18			

Table 4 displays the outcome of an independent samples t-test that was used to find out if there is a significant difference in perceptions by teachers' designation. The senior teachers ($M = 68.39$, $SD = 5.85$) had significantly higher mean scores than the junior teachers ($M = 66.41$, $SD = 7.18$). The t-value of 2.80 and the p-value of 0.005 ($p < 0.01$) are an indicator that there is a

statistically significant difference between both groups. This indicates that experienced teachers have a better understanding of remedial strategies and strategic instructional interventions compared to novice teachers, likely because they have more experience and are familiar with applying the same.

Table 5: *Perceptions Based on Place of Posting (Independent Samples t-test)*

Place of Posting	N	Mean	SD	df	t	Sig.
School	167	68.75	6.82	338	3.47	0.001
Centre	173	66.33	6.03			

Table 5 shows the outcome of an independent samples t-test for the difference in perceptions of teachers by posting location. Teachers who were posted in schools ($M = 68.75$, $SD = 6.82$) had higher mean scores compared to teachers posted in centers ($M = 66.33$, $SD = 6.03$). With a t-value of 3.47 and p-value of 0.001 ($p < 0.01$), the result is statistically significant. This indicates

that school-based teachers rate the effectiveness of integrated remedial measures and targeted instructional interventions more favorably, perhaps because of more direct interaction with students within organized classroom settings as opposed to those located in specialized or administrative centers.

Table 6: *Perceptions Based on Area of Posting (Independent Samples t-test)*

Area of Posting	N	Mean	SD	df	t	Sig.
Rural	58	71.02	6.50	338	4.61	< .001
Urban	282	66.80	6.32			

Table 6 shows the findings of an independent samples t-test according to posting area. Teachers in rural areas ($M = 71.02$, $SD = 6.50$) had significantly greater mean scores than their urban-based colleagues ($M = 66.80$, $SD = 6.32$). The t-value of 4.61 and p-value of 0.000 ($p < 0.01$) signify a statistical significance. This

implies that rural educators see remedial methods and strategic teaching interventions as being more useful, perhaps because it is easier to see improvement in resource-limited environments or because there is a greater focus on one-on-one instruction in rural school settings.

Table 7a: *Influence of Age on Perceptions (One-Way ANOVA)*

Age	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1210.83	3	403.61	10.23	0.00
Within Groups	13260.07	336	39.46		
Total	14470.89	339			

Table 7a shows a one-way ANOVA that was carried out to test for variations in response across age groups. From the result, there is a statistically significant difference in age groups since there is an F-value of 10.23 while the p-value is 0.00 ($p < 0.01$). This implies that the impact of age on teachers' perceptions about the

efficacy of remedial and strategic instructional interventions for learning disability students is significant. The larger difference could be an indication of varying degrees of experience, training exposure, or responsiveness to intervention approaches across age groups.

Table 7b: *Tukey HSD Post Hoc Comparisons Between Age Groups*

Comparison	Mean Difference	SE	p	95% CI
20–30 vs. 41–50	–7.42	1.52	< 0.001	[–11.27, –3.57]
20–30 vs. 51+	–8.15	1.48	< 0.001	[–12.01, –4.29]
31–40 vs. 51+	–5.86	1.55	< 0.01	[–9.78, –1.94]

To determine which specific age groups differed significantly, a Tukey Honestly Significant Difference (HSD) post hoc test was conducted. The results revealed the following pairwise comparisons ($p < 0.05$):

- Age group 1 (20–30 years) scored significantly lower than age group 3 (41–50 years) and age group 4 (51+ years).
- Age group 2 (31–40 years) also scored significantly lower than age group 4 (51+ years).
- No significant differences were found between age groups 1 and 2, nor between groups 3 and 4.

These findings indicate that older teachers (41 years and above) hold significantly more positive (or different) perceptions about the interventions compared to younger teachers (20–40 years). The middle-aged group (41–50) and the oldest group (51+) did not differ from each other, suggesting a possible threshold effect around age 40.

Note. Only significant comparisons ($p < 0.05$) are shown. Mean differences are in raw perception scores. CI = confidence interval.

Table 8: *Influence of Academic Qualification on Perceptions (One-Way ANOVA)*

Qualification	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	677.35	2	338.68	8.27	0.00
Within Groups	13793.54	337	40.93		
Total	14470.89	339			

Table 8 presents the outcome of a one-way ANOVA test performed to determine variations in response according to teachers' qualifications. The test provides a statistically significant value of $F = 8.27$ with $p\text{-value} = 0.00$ ($p < 0.01$), which shows that the qualification level of teachers (Master's, M.Phil., and PhD) has a

significant impact on their views regarding the effectiveness of remedial and strategic instructional interventions among learners with learning disabilities. This implies that higher levels of academic qualifications could lead to more positive or better-informed opinions regarding intervention approaches.

Table 9: *Influence of Teaching Experience on Perceptions (One-Way ANOVA)*

Experience	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	852.29	3	284.10	7.01	0.00
Within Groups	13618.60	336	40.53		
Total	14470.89	339			

Table 9 shows findings of a one-way ANOVA carried out to investigate the effect of experience as a teacher on beliefs about remedial and instructional interventions. The results show there is a statistically significant difference between groups with different levels of experience ($F = 7.01$, $p = 0.00$), meaning that years of experience have a significant impact on teachers' opinions about the effectiveness of methods employed for students with learning disabilities. This suggests that the more experienced teachers will have varying, perhaps more sophisticated, perceptions of these interventions than less experienced ones.

Findings

The demographic makeup of 340 interviewees was an overwhelmingly female teacher population, making up 65.3% of the sample versus 34.7% for male gender. The age group was overpowered by the 41-50 years category (56.2%), therefore forming a mature and potentially experienced group, while the youngest age group (21-30 years) was very small at 1.8%. By professional designation, senior teachers made up a majority of 55.9% and junior teachers a minority of 44.1%. By qualification, the most were with a Master's qualification (68.2%), followed by M.Phil. (28.5%), and an extremely minute number with PhDs (3.2%). The respondents were nearly evenly divided by the place of posting with 49.1% in schools and 50.9% in centers. But most were placed in urban settings (82.9%), with only 17.1% placed in rural settings. Based on teaching experience, 47.4% had 6–10 years, followed by 11–15 years (27.6%), 1–5 years (20.6%), and only 4.4% had over 15 years of teaching experience.

Teachers' perceptions on the usefulness of remedial and strategic instructional interventions

for learners with learning disabilities (LDs) were investigated and revealed strong agreement for all categories. All the 16 items were rated between 4.02 and 4.48, indicating overall consensus which was positive from educators. The strongest agreeable statement ($M = 4.48$) was that extensive remedial education has a very positive impact on the academic achievement of students with LDs. Other statements that were strongly supported were the necessity of early identification and intervention ($M = 4.47$), the importance of individualized instruction plans ($M = 4.37$), and multi-sensory instructional methods ($M = 4.32$). Educators also recognized the importance of assistive technologies, differentiated instruction, teamwork with specialists, and parental involvement to maximize intervention effects. Variations in reaction to professional development and curriculum infusion, however, suggest inequities in resources provided and implementation consistency between schools.

Statistical difference tests brought out a number of notable differences in perceptions by demographic variables. Independent samples t-test did not show any significant difference in perception between female and male educators ($t = 0.31$, $p = 0.755$), which suggests gender has no effect on opinion about remedial interventions. Senior teachers were significantly more optimistic than junior teachers ($t = 2.80$, $p = 0.005$), which suggests role seniority and experience play a part in more positive assessment of intervention efficacy.

Similarly, posting location affected attitudes with school-based teachers scoring much higher than those posted in centers ($t = 3.47$, $p = 0.001$). This would presumably be a result of more frequent and direct contact of school staff with

pupils, allowing greater appreciation of effect of intervention. Posting location also had an impact on perceptions; rural teachers reported substantially higher mean values than urban post teachers ($t = 4.61$, $p < 0.01$), perhaps because effects were more visible in resource-poor rural environments or because there was greater focus on individualized instruction. One-way ANOVA tests also showed significant differences between age, qualification, and experience groups.

Opinions between teachers differed enormously by age ($F = 10.23$, $p < 0.01$), qualification ($F = 8.27$, $p < 0.01$), and length of experience ($F = 7.01$, $p < 0.01$). What these results imply is that the experienced, older, and more highly qualified teachers will have more favorable attitudes toward remedial and strategic instruction interventions, possibly due to increased contact, training, and experience of multiple intervention models. Overall, the findings of the study confirm an overall positive inclination towards remedial and strategic instructional interventions on the part of primary school teachers with stark variations depending upon designation, location and area of posting, age, qualification, and experience. The study findings suggest that there is an implication for ongoing professional development and equal distribution of facilities to ensure equal initiation and attainment in diverse learning environments.

Discussion

The research findings provide useful information on teachers' knowledge of remedial and strategic instruction interventions for primary-level students with learning disabilities (LDs). The demographic feature provides an overdraft of the female teachers, which is in line with the global trend in education where women make a larger proportion of the teaching sector, especially at the primary level (Antoninis et al., 2020). Most of the respondents belonged to the age group 41 to 50 years, an experienced and mature teaching populace who can be expected to sway their educated opinion regarding intervention strategies.

Among the significant findings is the high overall consensus between teachers regarding the efficacy of holistic remedial instruction and strategic teaching approaches. High agreement with early detection, individualized teaching plans, and multi-sensory teaching techniques is commensurate with literature highlighting these elements as critical to enhancing learning performance in LD students (Cotterill, 2023). Identification of assistive technologies, differentiated instruction, specialist consultation, and parental inclusion further suggests the presence of effective intervention as a multi-dimensional construct commensurate with literature supporting inclusive and consultative models of education (Tancredi et al., 2023).

The absence of large gender discrepancies in perception that both male and female teachers value equally these interventions might be a signal of standardized professional preparation and shared pedagogical ideals. Yet, the considerably more favorable opinions among experience teachers would signal that seniority and experience increase self-confidence and appreciation of remedial measures. This would be in agreement with earlier studies on how experience in teaching yields heightened pedagogical sensitivity and more discerning awareness of pupil needs (Smith, 2020).

Place and area of posting differences are also important. Teachers based at schools were said to be more effective than center-based teachers as they have more everyday contact with pupils, which provides them with actual evidence of intervention effects. Analogously, more positive rural teachers' attitudes in comparison with their urban counterparts may be explained on the grounds of greater salience of pupil progress in resource-constrained rural settings or demand for more personalized teaching where other resources are in short supply. This is consistent with research that identifies intervention contextual effects on implementation and effect (Graham & Harris, 2019).

Substantial difference of attitude by age, qualification, and experience once again highlights the need for professional

development. Older, more experienced, and better-qualified teachers' positive attitudes have established that knowledge gained and exposure to training increase sensitivity and awareness in relation to remedial and strategic strategies. The need for ongoing training exists to close gaps between less experienced or lower-qualified teachers to facilitate equal and effective provision of intervention (Polloway et al., 2017).

The research discovers a positive leaning in general among primary teachers for remedial and strategic teaching interventions for LD students. However, variation by demographic and contextual characteristics points towards the need for specific support, including multiple professional development and resource provision, in an attempt to equalize the quality and effectiveness of interventions across learning settings.

Conclusion

This study discovers that remedial and strategic instructional interventions are perceived by teachers of primary education in a positive way as effective for students with learning disabilities. In-depth remedial instruction, early identification, individualized instructional plans, and multi-sensory methods are discovered to be perceived by teachers as effective to improve academic achievement. The results also highlight the crucial roles of assistive technology, cooperation with experts, and parental involvement in meeting students' learning requirements. These dispositions signal a strong foundation of professional knowledge and belief in the value of inclusive, concentrated instructional strategies at the elementary level.

However, significant variation according to teachers' designation, place and region of posting, age, qualification, and experience

suggests that attitudes are conditioned by contextual and demographic determinants. Older teachers, rural postings, higher qualifications, and more experience are likely to be associated with positive attitudes towards such interventions. Hence, in order to provide regular and efficient application in different educational environments, one needs to invest in ongoing professional development and equitable distribution of resources. All teachers, regardless of origin, will then be able to support pupils with learning disabilities optimally, as the study would like, for greater understanding of instructors' perspectives on intervention practices.

Recommendations

Following recommendations are made based on research findings:

- Offer continuous professional development courses to strengthen teachers' competencies in remedial and strategic interventions for learners with learning disabilities.
- Ensure there is equitable resource distribution and assistive technologies in urban and rural schools to support the application of consistent intervention.
- Create more collaboration among teachers, special educators, psychologists, and parents to enhance the effectiveness of instructional approaches to learners with disabilities.

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References

- Alahmari, A. (2019). A Review and Synthesis of the Response to Intervention (RtI) Literature: Teachers' Implementations and Perceptions. *International Journal of Special Education*, 33(4), 894-909.
- Alamri, A. (2024). Effectiveness of a Remedial Educational Program on Enhancing Spelling Skills in Primary School Students with Learning Disabilities.

- Andrews, J. J., & Syeda, M. M. (2017). Clinical reasoning in school psychology: From assessment to intervention. *Canadian Journal of School Psychology, 32*(1), 3-15.
- Antoninis, M., April, D., Barakat, B., Bella, N., D'Addio, A. C., Eck, M., ... & Zekrya, L. (2020). All means all: An introduction to the 2020 Global Education Monitoring Report on inclusion. *Prospects, 49*, 103-109.
- Axford, N., Berry, V., Lloyd, J., Moore, D., Rogers, M., Hurst, A., ... & Minton, J. (2019). How can schools support parents' engagement in their children's learning? Evidence from Research and Practice.
- Coleman, G. L. (2025). *Instructional Leaders and Elementary Teachers' Perspectives Regarding the Effectiveness of RtI in Elementary Reading* (Doctoral dissertation, Alabama State University).
- Cotterill, T. (2023). *A Student Guide to the SEND Code of Practice: Exploring Key Areas of Need*. Routledge.
- De Smedt, B., Peters, L., & Ghesquière, P. (2019). Neurobiological origins of mathematical learning disabilities or dyscalculia: a review of brain imaging data. *International Handbook of Mathematical Learning Difficulties: From the Laboratory to the Classroom*, 367-384.
- Graham, S., & Harris, K. R. (2019). Evidence-based practices in writing. *Best practices in writing instruction, 3*, 3-28.
- Hammed, L. A. (2022). *Effects of Concrete-Representational-Abstract and Buzz Group Strategies on Pupils' Academic Performance in Numeracy in Moro Local Government Area, Kwara State* (Master's thesis, Kwara State University (Nigeria)).
- Harmon, S., Street, M., Bateman, D., & Yell, M. L. (2020). Developing present levels of academic achievement and functional performance statements for IEPs. *TEACHING Exceptional Children, 52*(5), 320-332.
- Hess, K. (2023). Effective use of assistive technology to accommodate students with learning disabilities.
- Howard, T. C. (2021). Culturally responsive pedagogy. *Transforming multicultural education policy and practice: Expanding educational opportunity*, 137-163.
- Hughes, S. (2020). The effects of schema-based instruction on solving mathematics word problems. *Georgia Educational Researcher, 17*(2), 1.
- Khan, D. I., Shrivastava, D. G., Sharma, D. S., Singh, D. I., & Sharma, M. N. (2024). Understanding Learning Disabilities: Integrating Educational Strategies and Psychological Interventions. *Educational Administration: Theory and Practice, 30*(4), 1035-1041.
- McInerney, M., Zumeta, R. O., Gandhi, A. G., & Gersten, R. (2014). Building and sustaining complex systems: Addressing common challenges to implementing intensive intervention. *Teaching Exceptional Children, 46*(4), 54-63.
- Meutstege, K., Van Geel, M., & Visscher, A. (2023). Evidence-based design of a teacher professional development program for differentiated instruction: A whole-task approach. *Education Sciences, 13*(10), 985.
- Mitchell, D., & Sutherland, D. (2020). *What really works in special and inclusive education: Using evidence-based teaching strategies*. Routledge.
- Mohamed, F. M. E. (2021). Using Multi-Sensory Approach Based Activities for Developing Dysgraphic Primary Stage Pupils' EFL Writing Skills. 110-89), 3(116, مجلة كلية التربية بالمنصورة).
- Mutuku, E. S. (2023). *Teacher Preparedness for Inclusion and Support of Children With Specific Learning Disabilities (SLD) in Public Schools: a Study of Mutituni Zone in Machakos County* (Doctoral dissertation, University of Nairobi).
- Nguyen, A. (2024). Addressing Inequities: The Struggle for Quality Education and Life for Disabled and Marginalized Youth.
- Paik, J. M., Duong, S., Zelber-Sagi, S., Lazarus, J. V., Henry, L., & Younossi, Z. M. (2022). Food insecurity, low household income, and low education level increase the risk of having metabolic dysfunction associated fatty liver disease (MASLD) among adolescents in the United States. *Official journal of the American College of Gastroenterology| ACG, 10*-14309.
- Polloway, E. A., Bouck, E. C., Patton, J. R., & Lubin, J. (2017). Intellectual and developmental disabilities. In *Handbook of special education* (pp. 265-285). Routledge.

-
- Siegel, L. M. (2020). *The complete IEP guide: How to advocate for your special ed child*. Nolo.
- Smith, C. R. (2020). *A Case-Study Design on the Over-Representation of Minorities in Virginia Special Education*. Northcentral University.
- Spencer, T. D., & Petersen, D. B. (2020). Narrative intervention: Principles to practice. *Language, Speech, and Hearing Services in Schools*, 51(4), 1081-1096.
- Stevens, E. A., Austin, C., Moore, C., Scammacca, N., Boucher, A. N., & Vaughn, S. (2021). Current state of the evidence: Examining the effects of Orton-Gillingham reading interventions for students with or at risk for word-level reading disabilities. *Exceptional children*, 87(4), 397-417.
- Tancredi, H., Dixon, G., English, L., & Gallagher, J. (2023). Collaborating with colleagues and other professionals. In *Inclusive education for the 21st century* (pp. 347-368). Routledge.
- Travers, H. E., & Carter, E. W. (2022). A systematic review of how peer-mediated interventions impact students without disabilities. *Remedial and Special Education*, 43(1), 40-57.
- Zhang, L., Carter Jr, R. A., Basham, J. D., & Yang, S. (2022). Integrating instructional designs of personalized learning through the lens of universal design for learning. *Journal of Computer Assisted Learning*, 38(6), 1639-1656.
- Zijlstra, H., Van Bergen, E., Regtvoort, A., De Jong, P. F., & Van Der Leij, A. (2021). Prevention of reading difficulties in children with and without familial risk: Short-and long-term effects of an early intervention. *Journal of Educational Psychology*, 113(2), 248.