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A Meta-analysis of the effects of differentiated instruction on English language proficiency

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This meta-analysis systematically examined the effects of differentiated instruction (DI) on English language proficiency, addressing the growing need for instructional approaches that address diverse student profiles. Seven empirical studies published between 2017 and 2024 were included. The overall pooled mean difference was 2.92 with a 95% confidence interval [1.64–4.19], indicating significant improvements in learners' grammar, reading comprehension, and fluency. A high heterogeneity level (I^2 = 87%) was observed. The findings support DI as an effective pedagogical approach in multilingual English classrooms, consistently demonstrating its positive impact on grammar, reading comprehension, fluency, and overall language achievement compared to traditional approaches. However, substantial variability in effect sizes highlighted the influence of educational contexts, student characteristics, and DI implementation strategies. Methodological concerns, particularly regarding randomization and allocation concealment, also limited internal validity and generalizability. Despite these limitations, the findings reinforce DI's potential to promote equitable learning and enhance student engagement, advocating for its broader application in multilingual settings. Future research should adopt more rigorous experimental designs, longitudinal approaches, and comprehensive evaluations of implementation fidelity, while exploring contextual factors that shape DI effectiveness, to refine both theoretical frameworks and practical guidelines.

Keywords: differentiated instruction, effectiveness, language proficiency, meta-analysis

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INTRODUCTION

In the field of language education, the growing diversity of student needs has intensified attention on instructional methodologies capable of addressing varied proficiencies, learning styles, and personal interests. Differentiated instruction (DI) has emerged as an innovative pedagogical framework that provides customized educational experiences, effectively responding to the specific needs of students in English language classrooms. Its efficacy is well supported by numerous studies highlighting substantial positive impacts on learners' academic outcomes and engagement across diverse contexts (Hatmanto & Rahmawati, 2023; Melka & Jatta, 2022a; Ojong, 2023; Zólyomi, 2022). Given students' varied linguistic backgrounds and capabilities, integrating DI into educational practices creates a supportive environment crucial for enhancing English language proficiency, an indispensable skill in today's multilingual global landscape (Ojong, 2023; Sahril et al., 2021).

The necessity of instructional differentiation becomes particularly critical in addressing the unique challenges encountered by language learners, such as inadequate language skills, varying motivational levels, and diverse cognitive capacities (Ahmed, 2021; Sari, 2018). EFL classrooms are increasingly heterogenous comprising student who differ in prior knowledge, cultural backgrounds, and learning habits (Mahali & Sevigny, 2022).

Recognizing these distinct characteristics allows educators to employ strategies that not only support language acquisition but also foster inclusive and equitable educational opportunities (Ismail & Al Allaq, 2019; Zólyomi, 2022). Addressing these concerns is particularly urgent given the limitations of traditional, uniform instructional methods, which risk marginalizing students who struggle in standardized learning environments (Lawrence-Brown, 2020). Consequently, a thorough understanding of both the theoretical foundations and practical implications of DI is imperative for educators seeking meaningful improvements in English language teaching and learning outcomes (Hatmanto & Rahmawati, 2023; Ojong, 2023).

DI stems from constructivist learning theory, emphasizing learner-centered strategies that respond to student diversity (Ortega et al., 2018). This approach incorporates key constructs such as student variability, scaffolding, and formative assessment, which are essential differentiating content, processes, and products according to diverse student needs (Nassaji, 2017; Watts-Taffe et al., 2012). Empirical evidence further indicates that implementing DI frameworks encourages teachers to move beyond the traditional pedagogy, prompting learners to engage more deeply and fostering essential skills for lifelong learning (Sahril et al., 2021). Nonetheless, initial reluctance towards DI, often linked to misconceptions and insufficient professional training, remains a notable challenge to its broader adoption (Mavidou & Kakana, 2019).

Failure to adequately support language learners in overcoming disparities may have serious consequences. Students may find that developing core language skills is not merely challenging but essential for academic success, social interaction, and career advancement (Halil et al., 2024; Ojong, 2023). Insufficient differentiation can also lead students to experience disengagement and feelings of inadequacy, negatively affecting their educational experience and psychological well-being (Sahril et al., 2021). From a pragmatic standpoint, insufficient attention to student diversity creates substantial challenges for educators and policymakers striving to establish inclusive and effective learning environments (Hatmanto & Rahmawati, 2023; Ismail & Al Allaq, 2019). A lack of inclusivity in the classroom may leave some students vulnerable to underachievement, reduced motivation, disengagement, learning setbacks, and an inability to realize their full potential (Onyishi & Sefotho, 2020). Consequently, rigorous examination and refinement of DI methodologies are essential to ensure that all students benefit from high-quality education and can achieve their potential (Hatmanto & Rahmawati, 2023; Spencer-Waterman, 2014). Given these contextual considerations, this meta-analysis systematically evaluates existing research on the impact of DI on English language proficiency. Core methodological procedures include comprehensive literature reviews, careful analysis of research designs, and critical assessments of pedagogical effectiveness across diverse educational contexts (Melka & Jatta, 2022b; Sahril et al., 2021). This study principally aims to identify empirically supported DI strategies that enhance the effectiveness of English language teaching, while also highlighting gaps in the current research to provide a conceptual foundation for future investigations and pedagogical advancements in this domain.

Despite extensive evidence demonstrating the beneficial effects of DI on language learning, notable gaps remain concerning its practical application across varied educational environments and diverse student populations (Sari, 2018; Zólyomi, 2022). Previous research often overlooks the complexities associated with teacher beliefs, institutional constraints, and the consistent implementation of DI strategies in real-world classrooms (Chien, 2015; Hatmanto & Rahmawati, 2023; Sari, 2018). Although DI has been increasingly adopted in language education, empirical findings remain fragmented and inconclusive, particularly within multilingual EFL contexts. Existing studies exhibit methodological inconsistencies and rarely translate their outcomes into actionable pedagogical implications. Moreover, a comprehensive meta-analytic synthesis focusing on DI's effectiveness in enhancing English proficiency has not yet been conducted. This study addresses these gaps by offering an evidence-based evaluation of DI's impact, methodological rigor, and implications for inclusive language instruction. By systematically synthesizing the existing literature and emphasizing practical applications, it seeks to advance an integrated comprehension of DI's role in promoting English language proficiency (Melka & Jatta, 2022a; Zólyomi, 2022). Ultimately, the purpose of this meta-analysis is to identify effective DI practices, offer theoretical contributions, and generate actionable recommendations for educators and stakeholders engaged in language education.

Through meticulous literature analysis and synthesis, this study aims to comprehensively investigate the effects of DI on English language proficiency and provide insights essential for improving instructional effectiveness. As a pedagogical framework that directly addresses learner diversity, DI holds strategic relevance for curriculum design and inclusive teaching practices. This rationale is established in the abstract and introduction, while the conclusion highlights broader implications and future directions for instructional innovation, avoiding unnecessary repetition of earlier justifications.

METHODS

Search strategy

A systematic literature search was conducted in alignment with PRISMA guidelines, focusing on peer-reviewed journal publications from 2017 to 2024. Electronic databases including Scopus, Crossreff, and Google Scholar were searched using a combination of relevant keywords and Boolean operators such as differentiated instruction, English language proficiency, EFL, achievement, and meta-analysis. The search was limited to empirical studies employing quantitative methods, particularly experimental and quasi-experimental designs. Only articles written in English, with full-text availability and sufficient statistical data (e.g., means, standard deviations, and effect sizes), were included. The screening process involved several stages: initial title and abstract screening, full-text assessment, and duplicate removal using reference management software. Study selection was guided by the PICOS framework,

encompassing population, intervention, comparison, outcome, and study design, to ensure methodological rigor and contextual relevance, as outlined in Table 1.

TABLE 1 | Characteristics of Included Studies

Author	Sample Size	Participant Characteristics	Intervention	Control	Score	Measurement Tools	Duration
Hidalgo-Camacho et al. (2019)	69 students (36 experimental, 33 control)	EFL beginner undergraduates in Ecuador	DI in reading comprehension using leveled materials	Traditional reading instruction	Improved post-test scores in the experimental group (quantitative not specified)	Pre-Post test and teacher observation	Not stated
Jefferson et al. (2017)	83 students (Grade 3, 6 classrooms)	Grade 3 students from three schools in Texas	Differentiated instruction, including core curriculum, evidence-based reading instruction, and repeated reading	Traditional core reading instruction	Significant improvement in comprehension and fluency; no exact scores reported	Reading comprehension, fluency tests, and high-stakes measures	One semester
Kotob & Abadi (2019)	20 students (10 low achievers, 10 high achievers)	Grade 4 students, mixed ability classroom, Tyre region, Lebanon	Differentiated instruction using flexible grouping, content/process/product differentiation	None (single group, experimental design only)	Marked improvement in low achievers' scores; stable scores for high achievers (quantitative scores not detailed)	Informal Reading Inventory (IRI), Checklist of Intelligence Strengths	10 days
Labordo Jr. (2024)	60 students (30 experimental, 30 control)	Grade 11 students, L2 students, Philippines	DI with a multiple intelligences strategy	Traditional instruction	Experimental group: middle-high school level; control: sixth-level comprehension	posttests (virtual platform assessment)	Not stated
Magableh & Abdullah (2020)	60 students (30 experimental, 30 control)	Grade 6 EFL students, two schools in Taibeh District, Jordan	Differentiated instruction: flexible grouping, tiered assignment, tiered instruction (content, process, product)	Traditional instruction (one-size-fits-all)	Statistical significance favoring the experimental group (specific score difference not detailed)	English grammar achievement test	12 weeks
Magableh & Abdullah (2021)	54 students (27 experimental, 27 control)	10th-grade students, mixed-ability classrooms	DI with homogeneous grouping and tiered assignments	One-size-fits-all using a textbook	Experimental group outperformed control (quantitative not specified)	Standardized reading assessments (SEM-R framework)	Not stated

Menson (2024)	26 (JEEP 4 Section 12, MSU-Maguindanao)	University students, 2nd semester AY 2013-2014, advanced elementary to low intermediate English proficiency	Differentiated Learning Instruction (DLI)	None (one-group pre-test post-test design)	Pre-test mean: 51.75; Post-test mean: 63.44; $z = 2.71$, $p < 0.05$	Pre-test and post-test achievement scores	Not stated
Sapan & Mede (2022)	26 students + 1 teachers	8th-grade secondary school students in Istanbul, Turkey	Differentiated Instruction (DI)	Not clearly described, comparative qualitative feedback only	Improved scores in FLA, FLM, and LA (quantitative, not detailed)	Pre-test and post-test speaking assessment	Not stated

Study Selection

The PRISMA protocol was followed across three phases: identification, screening, and eligibility determination. Duplicates were removed using Zotero, and studies were assessed according to PICOS criteria. To enhance clarity and minimize redundancy, subheadings such as Search Strategy, Data Extraction, and Risk of Bias were incorporated. Figure 1 illustrates the selection process. Records were initially screened by titles and abstracts, followed by a full-text review to assess eligibility. Inclusion criteria were guided by the PICOS framework, focusing on studies involving EFL students, DI as the intervention, traditional methods as the comparison, English language proficiency as the outcome, and quantitative study designs. Two independent reviewers conducted the screening, and disagreements were resolved through consultation with a third reviewer. Only empirical studies with complete statistical data were included, while theoretical papers, reviews, and studies lacking sufficient information were excluded.

Data Extraction

A standardized data extraction protocol was employed to ensure methodological consistency and enhance the accuracy of cross-study comparisons. Two independent reviewers systematically extracted key study details, including authorship, publication year, research design, sample characteristics, and geographical context, type of DI intervention, comparison group, outcomes related to English language proficiency, statistical values, and intervention duration. Any inconsistencies were resolved through consensus-building discussions, with a third reviewer consulted when agreement could not be reached. In cases where multiple reports of the same study existed, the most complete version was used to ensure reliability for meta-analysis.

Risk of Bias

The potential risk of bias was systematically assessed using the Cochrane Risk of Bias 2.0 tool to ensure methodological integrity. The framework evaluates five pivotal domains: randomization procedures, adherence to intended interventions, completeness of outcome data, accuracy of outcome measurement, and transparency in outcome

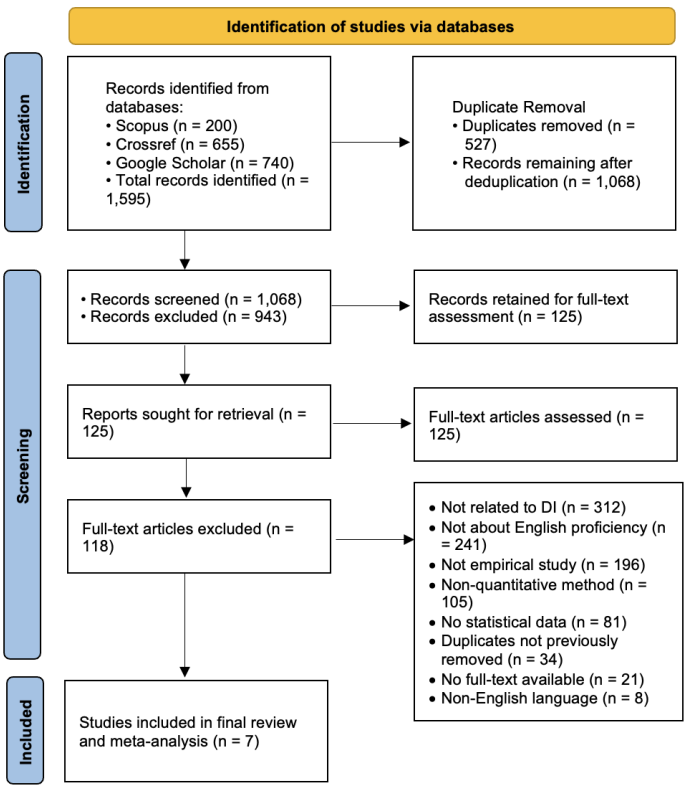

FIGURE 1 | PRISMA Flow Diagram of Article Selection

reporting. All assessments were documented in Review Manager (RevMan) version 5.4.1, which generated visual summaries such as traffic-light diagrams and summary graphs to facilitate interpretation and enhance transparency. The analysis indicated that while numerous studies demonstrated low risk in outcome measurement and selective reporting, significant methodological issues were identified, particularly in random sequence generation, allocation concealment, and blinding for participants and study personnel. These deficiencies pose potential threats to internal validity, suggesting that the results should be interpreted with caution. Consequently, the overall reliability of the meta-analytic findings depends on addressing these critical limitations in future research to strengthen methodological rigor and

validity.

Statistical analysis

Data analyses were conducted using RevMan version 5.4.1 to ensure methodological consistency and analytical accuracy. Effect sizes were calculated using the mean difference with a 95% confidence interval to compare outcomes between experimental and control groups. A random-effects model was applied in cases of significant heterogeneity, whereas a fixed-effects model was employed when heterogeneity was negligible Heterogeneity was assessed using the Chi-square (χ^2) test and quantified with the I^2 statistic, where values of 25%, 50%, and 75% representing low, moderate, and high heterogeneity, respectively. Statistical significance was determined using the Z test, with results considered significant at p-value less than 0.05. Additionally, funnel plot analysis was conducted to visually examine and assess potential publication bias.

RESULTS AND DISCUSSION

The Search Results

The PRISMA flow diagram clearly depicts the systematic selection procedure implemented in this meta-analysis, which comprised ten structured steps. Initially, a comprehensive search identified 1,595 records from multiple databases: Scopus (n = 200), Crossref (n = 655), and Google Scholar (n = 740). After removing 527 duplicate, 1,068 records remained for screening based on titles and abstracts, resulting in the exclusion of 943 articles. The full texts of 125 articles were then assessed for eligibility, leading to the exclusion of 118 studies for various reasons; irrelevance to DI (n = 312), lack of focus on English language proficiency (n = 241), lack of an empirical methodology (n = 196), reliance on non-quantitative approaches (n = 105), insufficient statistical reporting (n = 81), overlooked duplicates (n = 34), unavailability of full-text versions (n = 21), and publications in languages other than English (n = 8). Ultimately, seven studies met all inclusion criteria and were incorporated into the final systematic review and meta-analysis. A detailed visual representation of this selection process is provided in Figure 1.

Characteristics of Included Studies

Table 1 presents a synthesized overview of seven empirical studies that implemented DI across various educational levels, addressing learners with diverse abilities and linguistic backgrounds. To ensure interpretability and transparency, this synthesis is supported by a PRISMA flowchart (Figure 1) outlining the study selection process, a forest plot (Figure 3) illustrating effect sizes across studies, and a funnel plot (Figure 4) highlighting potential publication bias. Each figure is described in detail within the narrative to ensure clarity, coherence, and adherence to meta-analytical reporting standards. Sample sizes varied from 20 students in Kotob and Abadi (2019) to 83 in Jefferson et al. (2017), with participants ranging Grade 4 learners to university-level students. The DI interventions included tiered assignments (Magableh & Abdullah, 2020; Magableh & Abdullah, 2020, 2021), flexible grouping (Kotob & Abadi, 2019), repeated reading (Jefferson et al., 2017), and multiple intelligences strategies (Labordo, 2024). Menson (2024) reported significant learning gains among university students ($z = 2.71$, $p < 0.05$), while Jefferson et al. (2017) found improvements in comprehension and fluency. Measurement tools varied across the studies, and intervention durations ranged from 10 days to one semester. Overall, findings consistently showed that DI interventions outperformed traditional instructional methods in enhancing reading, grammar, fluency, and student engagement, confirming their effectiveness as summarized in Table 1.

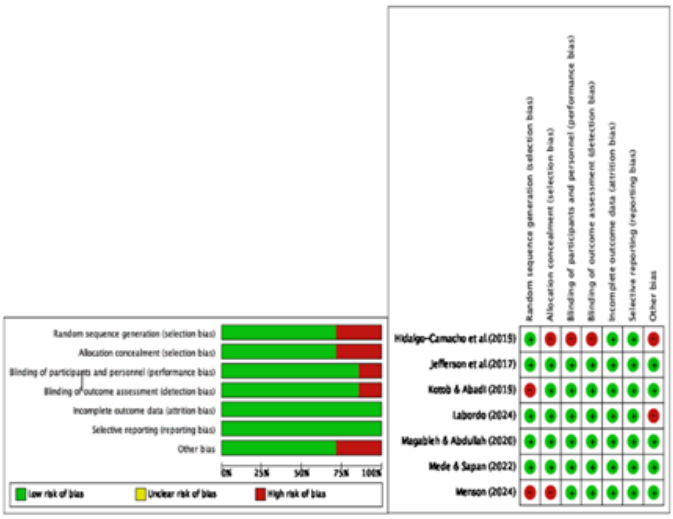

FIGURE 2 | Bias of Risk of 7 Studies

Outcome Measures

The outcome measures in this meta-analysis primarily focused on evaluating the effects of DI on various dimensions of English language proficiency. Across the included studies, assessments employed a diverse range of tools, including standardized reading assessments (e.g. SEM-R), grammar achievement tests, fluency tests, and pre- and post-test instruments tailored to specific skills such as reading comprehension, grammar, speaking, and overall language performance. For example, Jefferson et al. (2017) utilized comprehension and fluency tests; Kotob and Abadi (2019) applied Informal Reading Inventories and intelligence checklists; and Magableh and Abdullah (2020) employed grammar-specific assessments. Menson (2024) reported mean gains based on pre- and post-test evaluations. While these measurement tools varied in format and scope, they consistently demonstrated positive learning gains attributed to DI interventions, thereby validating the effectiveness of differentiated strategies across multiple linguistic domains and diverse students' profiles.

Study Quality

The assessment of study quality, as illustrated in Figure 2, shows notable variation in methodological rigor, particularly regarding the risk of bias. While most studies demonstrated low risk in areas such as outcome assessment, incomplete data, and selective reporting, high risk was most commonly observed in random sequence generation, allocation concealment, and blinding of participants and personnel. Specifically, over half of the studies did not provide sufficient detail regarding their randomization procedures, raising

concerns about potential selection bias. Similarly, inadequate allocation concealment and insufficient blinding increased the likelihood of performance and detection bias. Conversely, domains such as incomplete outcome data and selective reporting generally presented a low risk of bias. This overall pattern underscores the need for greater methodological rigor in future DI intervention studies, especially in implementing proper randomization and blinding procedures. For instance, studies such as Hidalgo-Camacho et al. (2019); Kotob and Abadi (2019); and Menson (2024) consistently showed high risk in these areas, indicating possible threats to internal validity. The accompanying bar chart further confirms that around 70% to 80% of the studies were affected by these critical biases. Additionally, a substantial proportion of "Other bias" suggests the presence of methodological issues not fully captured by standard categories. These findings emphasize the importance of interpreting the meta-analysis findings with caution, as weaknesses in randomization and blinding may have influenced the observed effect sizes. Recognizing these risks, as shown in Figure 2, is essential for drawing valid and reliable conclusions.

Effects of interventions

Overall English Language Proficiency scores

The forest plot (Figure 3) shows that the pooled mean difference across seven studies was 2.92 with a 95% CI of [1.64–4.19], indicating that students who received DI outperformed those in control groups. This suggests that DI has a substantial positive impact on English proficiency. However, the high heterogeneity value (I^2 = 87%) indicates significant variability among studies, likely influenced by factors such as instructional duration and student demographics. The effect size is statistically significant, as evidenced by a Z-value of 4.49 and a p-value of < 0.00001, confirming that the implementation of DI consistently yields higher outcomes than the control groups across studies. Among the included studies, Jefferson et al. (2017) and Magableh and Abdullah (2020) reported the largest effects (6.95 and 6.70, respectively), while the smallest effect was observed in Hidalgo-Camacho et.al. (2019) with a mean difference of 0.74. The variation in study outcomes is reflected by the substantial heterogeneity index (I^2 = 87%), suggesting that 87% of the observed variance in effect sizes is due to genuine differences across studies rather than random error. This is further supported by a significant Cochran's Q test (Chi^2 = 45.74, df = 6, p < 0.00001), confirming the presence of substantial between-study heterogeneity. Overall, these findings imply that while DI is generally effective, its magnitude of impact may vary depending on contextual factors such as sample characteristics, intervention design, and implementation fidelity. For a clearer understanding of the distribution and magnitude of effect sizes, see Figure 3.

The assessment of bias and heterogeneity, as shown in Figure 4, reveals notable methodological and statistical concerns. The asymmetry observed in the funnel plot suggests the presence of publication bias or small-study effects, possibly resulting from the selective non-reporting of studies with less favorable outcomes. Notably, the findings align with previous research emphasizing the positive impacts of DI on learning outcomes, particularly for students with diverse proficiency levels. DI enables educators to employ strategies such as differentiated grouping, instructional scaffolding, and stratified tasks tailored to learners' interests, preparedness, and cognitive profiles, thereby facilitating more effective management of mixed-ability classroom (Maruf, 2023; Nepal et al., 2021). Valiandes and Neophytou (2018) highlight that these practices provide differentiated support and scaffolding based on students' readiness levels and leaning profiles. Similarly, Puzio et al. (2020) assert that differentiated literacy instruction is especially crucial in mixed-ability classrooms, given the growing diversity of educational contexts. Our findings also corroborate the work of AM et al. (2023), who found that differentiated strategies enhance academic performance and foster meaningful students engagement. Furthermore, the improvements in comprehension and fluency reported by Smale-Jacobse et al. (2019) resonate with our findings, emphasizing DI's role in fostering higher educational achievement and engagement through equitable learning opportunities (Melese & Tinoca, 2019).

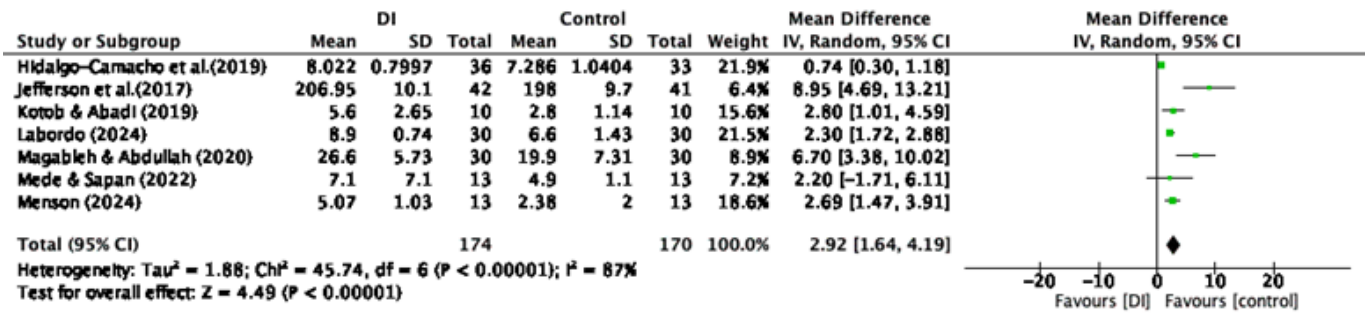

FIGURE 3 | Forest Plot Showing the Effect of Differentiated Instruction

However, our analysis highlights notable variances in effect sizes across studies, underscored by a high heterogeneity index (I^2 = 87%). This variability may stem from contextual factors such as differences in educational systems, student demographics, and the specific implementations of DI strategies. For instance, while Puzio et al. (2020) and Mavidou and Κακανά (2019) reported larger effect sizes, other studies observed much smaller effects, signaling the complex interplay of factors influencing DI's efficacy. This divergence supports the notion that while DI has strong potential to enhance learning, careful consideration of contextual and methodological factors is essential, echoing previous literature that similarly cautions against overgeneralizing findings from individual studies (Mavidou

& Kakana, 2019).

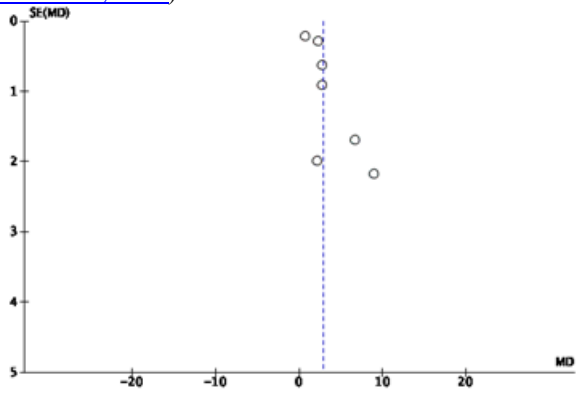

FIGURE 4 | Funnel Plot Indicating Publication Bias

The variation in the magnitude of learning gains across studies further indicates the importance of systematic and intentional implementation of DI. Studies employing well-structured experimental and control groups, as evidenced in Jefferson et al. (2017) and Magableh and Abdullah (2020) provided stronger empirical evidence than single-group pre-post-test designs (Menson, 2024). Also, students exposed to longer implementation periods, such as the 12-week intervention in Magableh and Abdullah (2020) showed greater improvements compared to the 10-days intervention in Kotob and Abadi (2019). These findings reinforce the idea that rigorous and deliberate alignment of teaching strategies with students' learning needs can become a transformative tool for addressing diverse student profiles.

Furthermore, the systematic review raises concern about methodological rigor, particularly risks of bias arising from inadequacies in sequence randomization and allocation concealment, as evidenced in studies such as Kotob and Abadi (2019) and Uy (2023). The short duration of some interventions and the absence of long-term follow-up assessments also raise questions about the sustainability of observed improvements. The high incidence of such biases calls for cautious interpretation of the findings, aligning with concerns raised in broader meta-analytic perspectives on educational interventions (Suprayogi et al., 2024; Uy, 2023).

Moreover, four out of seven analyzed studies disproportionately emphasized certain domains of English proficiency, such as reading (Hidalgo-Camacho et al., 2019; Jefferson et al., 2017; Kotob & Abadi, 2019; Magableh & Abdullah, 2020) and speaking (Sapan & Mede, 2022). Thus, while our results support the effectiveness of DI, the potential weaknesses in study designs warrant a cautious interpretation of these teaching methods, reinforcing calls for more rigorous future research (Sahril et al., 2021; Tricco et al., 2018).

Although previous literature consistently supports DI's efficacy, this meta-analysis found that its effectiveness varies depending on implementation quality, instructional duration, and assessment methods. For example, studies using tiered assignments over extended periods produced greater learning gains. These findings highlight the need for strategic planning and teacher preparedness in applying DI effectively. Indeed, Easa and Blonder (2023) acknowledged that implementing DI practices is a complex and challenging task. Similarly, Mavidou and Kakana (2019) argue that curriculum adjustments and the rigor of the implementation process significantly influence outcomes (Mavidou & Kakana, 2019). Our findings align with this perspective, as variations in duration, instructional strategies (e.g., tiered assignments vs. flexible grouping), and assessments types (standardized vs. high-stake tests) across studies indicate that DI's impact is nuanced and contingent upon proper execution (AM et al., 2023; Sahril et al., 2021).

Moreover, our findings resonate with Scott and Spencer's (2006) assertion regarding the importance of intervention fidelity in achieving desired educational outcomes. Successful DI requires not only a strategic approach to instruction but also a strong commitment to quality implementation that aligns instructional strategies with the diverse needs of students (Bullers et al., 2018). The needs for intensive support for teachers , particularly in addressing challenges such as large class size, limited resources and access, time constraints in lesson preparation, has been highlighted as a reminder for policymakers (Amoakwah & Donkoh, 2023; Sellier & An, 2020; Shareefa, 2021). These findings corroborate Menson's (2024) earlier work, which emphasized the teachers must be adequately trained in DI practices to ensure effective application (Uy, 2023). Equally important is teachers' sense of efficacy, as it is positively associated with instructional quality, including the use of differentiated instruction and effective classroom management strategies (Woodcock et al., 2022).

When correlating our findings with previous research, it is notable that the push for DI is increasingly supported by educational policies advocating for more inclusive and adaptive teaching practices in mixed-ability classrooms. Stone (2018) highlights the necessity for teachers to move away from a "one-size-fits-all" model, mirroring our argument that DI enhances learning outcomes for diverse student populations (Smale-Jacobse et al., 2019). These findings underscore the pedagogical value of DI in addressing the linguistic and cognitive diversity commonly found in multilingual English classrooms, reinforcing its practical relevance for fostering inclusive and effective language learning environments.

In summary, our meta-analysis contributes to the growing body of literature substantiating the efficacy of DI in educational settings. The findings not only reinforce existing theoretical frameworks but also illuminate practical implications for educators. However, further research is critical to unpack the intrinsic variables influencing DI's effectiveness and to develop robust guidelines that can better support teachers in implementing these strategies across diverse contexts (Partanen et al., 2019; Varghese et al., 2021). Sustained academic dialogue will be crucial in refining our understanding and approach to differentiated instruction in the pursuit of greater educational equity and excellence.

CONCLUSION

This meta-analysis substantiates the effectiveness of Differentiated Instruction in enhancing learners' grammar, reading comprehension, fluency, and overall English language proficiency. Compared to conventional pedagogical

approaches, DI consistently yields superior outcomes while fostering inclusivity in linguistically diverse classrooms. The evidence affirms DI's strategic role in advancing equitable and responsive language education.

However, the interpretation of these findings must be tempered by several methodological limitations, particularly inconsistencies in randomization procedures, allocation concealment, and blinding across the included studies. Furthermore, the substantial heterogeneity observed (I^2 = 87%) underscores the need for caution when generalizing results beyond the reviewed contexts.

The implications of this synthesis advocate for the systematic integration of DI into language education policies and professional development programs. To reinforce the validity and applicability of future findings, subsequent research should adopt more rigorous experimental designs – particularly randomized controlled trials – and examine longitudinal effects, implementation fidelity, and contextual moderators such as teacher expertise and institutional support. Addressing these dimensions will not only refine theoretical understanding but also inform evidence-based instructional practices across diverse educational settings.

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