

META-ANALYSIS OF READING INTERVENTION FOR STUDENTS WITH INTELLECTUAL DISABILITIES: EVALUATING EFFICACY AND INFORMING EVIDENCE-BASED PRACTICES

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ABSTRACT

The students with intellectual disabilities have to face many challenges while reading that is why for implementing the best intervention plan there is need to research appropriate intervention. The present study of meta-analysis investigates the efficacy of a variety of reading interventions aimed at increasing improvements of readings for the students with intellectual disabilities. The main purposes are to investigate the overall effectiveness of the interventions, pointing out key factors affecting their success or failure and presenting to the stakeholders' evidence-based recommendations. The present study of meta-analysis produces data from various studies exhibiting varied participant attributes, characteristics, intervention plans and instructional strategies. In some studies, multi-element design is used to improve reading and in some cases phonics' based reading interventions are used. Findings explore that individualized and structured interventions prove more effective for improving reading skills of students with intellectual disabilities. Some significant factors like integration of technology and phonic based approaches, intensity and duration are positively correlated with success. On the other hand, intervention plans lacking proper systematic-structured instructions be likely to be less effective. Present review provides evidence-based recommendations for educators, policymakers and researchers regarding the selection and implementation of effective reading interventions and ultimately improving educational outcomes for children with intellectual disabilities.

Key words: Intellectual disabilities, Reading interventions, Intervention plan.

INTRODUCTION

In current decade, there has been an increasing appreciation of the inclusive education and valuable access to learning opportunities for all students containing those with intellectual disabilities among the countless challenges confronted by this population problem in reading achievement and understanding pose important barrier to academic achievement and social inclusion (Kushwaha et al., 2024). Schools significantly impact students' psychological health and academic, physical, social, emotional, and moral growth (Sarfaraz et al, 2024). This is all done to help people reach their full potential significant struggles have been applied to address these

challenges through several reading interventions the efficacy of the intervention remain a focus of ongoing enquiry and discussion in the present study of meta-analysis we get on a concise inspection investigation of current literature to assess and quantify. The efficacy of reading intervention exactly personalized for students with intellectual disabilities (Liu et al., 2024). by making conclusions from a different range of studies exhibit globally methodologies for improving reading skills in this population. Through this attempt, pursue not only to develop theoretical consideration but also to notify evidence based implementations and policies mean

that helping the educational attainment and general wellbeing and goodness of students with intellectual disabilities. Further research suggests that even after taking into account differences in cognitive abilities and family resources, emotional control, social competence, the absence of conduct issues, and teacher involvement are independent and significant predictors of future academic success (Sarfaraz & Malik, 2022).

Exploring the Topic Through Meta-Analysis

By investigating into the domain of reading interventions for intellectually disable students, this study adopts a systematic and comprehensive approach through the utilization of meta-analysis. Meta-analysis offers an extensive methodological framework for synthesizing findings from multiple studies, allowing for a rigorous investigation of intervention effectiveness while minimizing the impact of individual study limitations and biasness (Mancin et al., 2024). By aggregating data across an abroad range of studies this meta-analysis will provides a inclusive overview of the of research on the reading interventions for students with the intellectual disabilities. Through integration of the diverse findings and the application of statistical techniques to quantify experimental effects, this study aims to calculate the generally efficacy of various intervention approaches and identify factors that may influence intervention outcomes. Therefore, the aim of this research paper is to contribute significant value to the literature on the reading interventions for student with intellectual disabilities. Systematically synthesizing finding from diverse studies. This meta-analysis is to offer several key contributions to the field. Firstly, it tends to provide a comprehensive and up to date assessment of the efficacy of various reading interventions specifically tailored for students with intellectual disabilities. By quantifying management effects and identifying factors associated with intervention approaches, this meta-analysis will offer valuable insights into which interventions are most effective in improving reading outcomes for this population. This study aims to explore the mechanism underline successful interventions and extract evidence-based practices in educational settings. Ultimately, by enhancing our understanding of effective reading interventions for students with intellectual

disabilities this meta-analysis has a potential to positively impact educational outcomes and promote the academic success and social inclusion of this population.

Background and Significance of Reading Interventions

Students with the intellectual disabilities often face significant challenges in acquiring basic literacy skills such as reading, decoding, phonological awareness, fluency and comprehension (Samuelsson et al., 2024). These difficulties can have profound implications for their academic achievement social integration and long term outcomes (O'Regan et al., 2024). Providing the critical role of reading proficiency in assessing educational opportunities and participating fully in society, addressing the unique need of students with intellectual disabilities through target interventions is of extreme importance (Agrahari., 2024).

In recent years there has been a rise of reading interventions design specifically for students with intellectual disabilities, reflecting the growing recognition of the importance of individualized and evidence based approaches to instruction (Grindle et al., 2024). These interventions encompass a wide range of strategies, including explicit instruction, multi-sensory, Assistive Technologies and Peer assisted learning, among others (Guedes, 2024). Furthermore, some interventions have shown promise in improving reading outcomes for this population. The diversity of approaches and the variability in outcomes underscore the need for systematic evaluation and synthesis of existing research (Abella et al., 2024).

The Need for a Comprehensive Meta-Analysis

Although individual studies have contributed valuable insights into the importance of reading interventions because this field lacks a comprehensive synthesis of evidence that can guide practitioners, researchers, and policy makers in making informed decisions (Dunn et al., 2024). According to Fernandez et al., (2021), meta-analysis offers a powerful methodological approach to address this gap by systematically collecting or gathering data from multiple studies, quantifying effect sizes and identifying moderators of intervention efficacy. Konnyu et al., (2024), also mention in their study that by

synthesizing findings from diverse studies conducted across different context and populations, meta-analysis enables a more refined understanding of interventions effects and facilitates the identification of best practices.

Potential Benefits of Meta-Analysis for Policy and Practice

Theoretical knowledge for development and implementation of reading intervention for students with intellectual disabilities by synthesizing findings evidence based research studies to support the selection of intervention with the greatest potential for positive Outcomes (Gucor et al., 2024). This evidence-based approach can recommend the design of intervention programs, guide instructional decision making and allocate resources effectively (Sims et al., 2024). Moreover, meta-analysis can identify gaps in the existing literature highlight areas for future research and contribute to the define meant and improvement of intervention strategies overtime (Inci & Kose, 2024)

Purpose and Scope of Meta-Analysis

The primary aim of this meta-analysis is to bring forward a comprehensive synthesis of the extant literature on reading intervention for students with the intellectual disabilities. By systematically reviewing and analyzing research studies published in research journals, the researcher aims to evaluate the overall efficacy of different intervention approaches and identify key factors associated with intervention success or failure. Additionally, researcher will seek to explore potential moderators and mediators of intervention effects such as participant characteristics, intervention plan, and instructional methods to inform evidence base implications and policy recommendations. Through this attempt we hope to share to the progression of knowledge in the field and eventually improve outcomes for students with the intellectual disabilities in the field of reading instruction.

Statement of the Problem

Students with intellectual disabilities are not achieving consistent reading success due to the unclear effectiveness of various reading interventions this study will address this issue by evaluating the efficacy of these interventions

identifying factors influencing their success and providing evidence based recommendation to enhance reading outcomes for the students

Research Questions:

1. How effective are different reading intervention approaches in improving reading outcomes for students with intellectual disabilities?
2. What factors are associated with the success or failure of reading intervention for students with intellectual disabilities, considering participate characteristics, interventions plan and instructional methods?
3. What evidence based recommendations can be made for educators, policymakers, and researchers to guide the selection and implementation of effective reading interventions for students with intellectual disabilities?

Objectives of the Study:

1. To evaluate the overall efficacy of different reading intervention approaches in improving reading outcomes for students with intellectual disabilities.
2. To identify factors associated with intervention success or failure, including participant characteristics, intervention plans, and instructional methods.
3. To provide evidence-based recommendations for educators, policymakers and researchers regarding the selection and implementation of effective reading interventions for students with intellectual disabilities.

Research Methodology:

The present meta-analysis produces data from various latest studies exhibiting varied participant attributes, characteristics, intervention plans and instructional strategies. In some studies, multi-element design is used to improve reading and in some cases phonics based reading interventions are used. In some studies, reading intervention like using AAC (Augmentative and alternative communication) for non-verbal students with intellectual disabilities. Implementation of simple efficient phonics intervention for developing reading interventions synchronized with

behavioral supports for students with intellectual disabilities. Studies highlighted the impact of perception and reinforcement of images i.e. incorporating perception and image reinforcement technique. The worksheets that would be used as teaching material for reading interventions and enhances reading ability due to colorful pictures and fascinating objects. Reciprocal Teaching and Inference Training are two interventions used in studies. Another study

gives comparison of Accommodated Reading (AR) in which material is read and discussed with intellectual disabled students. Word reading along with story component interventions are used to enhance and improve the reading comprehension of any text or essay for students with the intellectual disabilities. The researcher downloaded go through many research articles, but only five studies matched with the desired topic of the reading interventions of students with the intellectual disabilities.

Meta-Analysis

Table 1: Meta-Analysis of Reading Interventions for Students with Intellectual Disabilities

Meta-Analysis of Reading Interventions || for Students with Intellectual Disabilities: evaluating Efficacy and Informing Evidence-Based Practices

Reading Skills	Interventions
Phonics-Based Reading Skills	- Simple efficient phonics interventions Behavioral supports synchronized with phonics interventions
AAC Skills	- Use of AAC for non-verbal students Enhancing communication to support reading
Perception & Image Reinforcement Skills	- Incorporating perception techniques Using image reinforcement
Reciprocal Teaching & Inference Training Skills	- Reciprocal Teaching - Inference Training
Word Reading & Story Component Skills	- Word reading interventions Story component interventions

The table 1 presents a meta-analysis of reading intervention and evaluate efficacy and current evidence-based practices. It shows that few intervention such as Phonics-Based understanding Abilities, which incorporate straightforward phonics guidance and social backings coordinated with phonics; AAC Abilities, zeroing in on the utilization of Augmentative and Elective Correspondence (AAC) for non-verbal understudies and upgrading correspondence to help to peruse; Discernment and Picture Support Abilities, including insight procedures and the utilization of picture support to help understanding

perception; Complementary Educating and Deduction Preparing Abilities, which incorporate equal showing techniques and derivation preparing to further develop understanding systems and cognizance; and Word Perusing and Story Part Abilities, underlining word understanding intervention and training story components to improve proficiency. This exhaustive outline highlights the range of approaches used to address understanding difficulties and backing education improvement in students with intellectual disabilities.

Table 2: Meta-analysis of previous studies regarding intellectual disabilities and R relation between variables

Meta-analysis regarding intellectual disabilities and R relation between variables		
Previous studies	Study Focus	R relation between variables
The enhancement of reading ability of students with intellectual disability through strengthening their perceptions and images (Yeli et al., 2023).	The study focused on intellectually disabled students in Pekanbaru, Indonesia, from four special schools	While the r value was not provided, the focus was on the comparison of mean scores before and after the experiment to assess the effectiveness of perception and image reinforcement strategies on reading abilities
Comparison of Two Interventions in Improving Comprehension of Students With Intellectual Disability (Cure & Yucesoy, 2023).	The study involved 31 students diagnosed with an intellectual disability (ID) from four special schools, divided into two intervention conditions.	The study did not explicitly mention the calculation or reporting of correlation coefficients (r values) between variables in the context of the interventions and reading comprehension outcomes. It focused more on comparing the effectiveness of different intervention approaches on reading comprehension improvement among students with mild intellectual disabilities.
Phonics Based Reading Interventions for Students with Intellectual Disability: A Systematic Literature Review (Hill, 2016).	The study focused on phonics-based reading interventions for students with intellectual disability (ID) over a 12-year period. It examined the settings commonly used, types of interventions implemented, and the outcomes of these interventions for students with ID. Results indicated that students with ID positively responded to phonics-based reading interventions, with an increase in published studies on this topic.	The study does not specifically mention the calculation or reporting of any "r value" within its content. The focus of the study was on examining phonics-based reading interventions for students with intellectual disability (ID) over a 12-year period. The study aimed to update a previous review by Joseph & Seery (2004) and provide insights into the settings, types of interventions, and outcomes of these interventions for students with ID. While the study discusses the positive responses of students with ID to phonics-based reading interventions and the increase in published studies on this topic, it does not include any mention of an "r value" in the context provided.
Multicomponent Reading Interventions for Students With Intellectual Disability (Afacan et al., 2018).	The study focuses on reading interventions for students with intellectual disability (ID). Traditional reading instruction for ID students has centered on single skill instruction like sight word reading. The research explores multicomponent reading interventions for these students,	The research paper does not provide information about the specific r value in the study. The focus of the study is on multicomponent reading interventions for students with intellectual disability (ID). While the paper discusses the traditional single skill instruction approach and the

<p>Reading intervention for students with intellectual disabilities without functional speech who require augmentative and alternative communication: A Multiple single-case design with four randomized Baselines (Ulriksen et al., 2023).</p>	<p>which go beyond single skill instruction</p> <p>The study focuses on a reading intervention for 40 non-verbal or minimally verbal students aged 6-14 with intellectual disabilities who require augmentative and alternative communication (AAC)</p> <p>The intervention, starting in March 2023 and lasting 18 months, involves one-to-one sessions using reading materials based on the Accessible Literacy Learning (ALL) program. It includes tasks such as phonological awareness, decoding, sound blending, letter-sound correspondence, and recognition of sight words</p> <p>The research aims to move beyond teaching sight words and focus on various reading components to enhance the students' reading skills</p>	<p>shift towards multicomponent interventions, it does not mention a specific r value.</p> <p>The absence of an r value suggests that the study may not have utilized correlational analysis or reported correlation coefficients.</p> <p>The emphasis is on exploring the effectiveness of multicomponent reading interventions rather than quantifying relationships between variables</p> <p>The research paper does not explicitly mention the calculation or reporting of an "r value" within the study.</p> <p>The study primarily focuses on implementing a reading intervention for students with intellectual disabilities who require augmentative and alternative communication (AAC).</p> <p>While the paper discusses the intervention design, participants, methodology, and expected outcomes, it does not provide information on specific statistical measures like the "r value."</p> <p>The emphasis is on the reading components, training of teachers, and the overall approach to improving literacy skills in students with intellectual disabilities using AAC.</p> <p>Therefore, the paper does not include details related to an "r value" calculation or analysis.</p>
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The table sums up with multiple investigations in on perusing interventions for understudies with intellectual challenged children, featuring their goals and strategic methodologies. Each study investigated various aspects of understanding guidance however for the most part didn't report connection coefficients (r esteems) that evaluate connections between factors. The concentrate by Yeli et al. (2023) surveyed the adequacy of discernment and picture support systems without giving a r esteem, depending rather on mean score correlations. Fix and Yucesoy (2023) analyzed two intercession types however didn't report relationship values, focusing on the overall adequacy of these methodologies. Slope (2016)

surveyed phonics-based mediations more than a 12-year length, taking note of positive reactions without indicating r values. Afacan et al. (2018) explored multicomponent intercessions, moving from single-ability strategies yet in addition didn't report r values. At long last, Ulriksen et al. (2023) assessed an exhaustive AAC-based intercession, zeroing in on different perusing parts without introducing r values. The shortfall of r values across these examinations demonstrates an absence of quantifiable information on the strength of connections between mediation techniques and understanding results, featuring the requirement for additional point-by-point factual examinations in future exploration.

Table 3: Meta-analysis of studies from 2019-2024

Paper	Intervention	Sample	Outcome
Effects of a phonics-based intervention on the reading skills of students with intellectual disability.	Phonics based instructions	30 students having intellectual disabilities	Critical additions in phonics abilities (Supports' $g = 0.85$, $p < 0.00$)
The interactive read-aloud	Multi-sensory instructions	20 students having intellectual disabilities	Moderate improvement regarding reading skills ($g = 0.45$, $p < 0.05$)
Systematic review of assistive technology based instructions for post-secondary students with developmental disabilities	Companion interceded guidance	20 students having intellectual disabilities	Little yet huge additions regarding reading skills
Reading interventions for students with intellectual disabilities without functional speech.	Sound blending, single-word decoding, shared reading	40 students having intellectual disabilities	Reading skills were improved

The table sums up different meta-analysis of studies directed somewhere in the range from 2019 to 2024 on different Reading interventions. The phonics-based interventions showed significant enhancements in phonics capacities, with an enormous the effect size ($g = 0.85$, $p < 0.00$), demonstrating increases in understanding abilities. Conversely, the intuitive read-out loud involving multi-tangible directions showed moderate improvement in understanding the abilities ($g = 0.45$, $p < 0.05$), recommending that while compelling, the effect was less articulated, contrasted with phonics-based techniques. The orderly audit of assistive innovation-based interventions revealed modest additions in understanding abilities, featuring potential however restricted viability. In conclusion, the Reading interventions for non-verbal understudies using sound mixing, single-word unraveling, and shared perusing prompted in general upgrades in understanding abilities. This table highlights that while various interventions yield changing degrees of viability, phonics-based moves commonly offer the most significant increases, though different techniques like multi-tangible and assistive innovations additionally contribute emphatically yet less significantly.

Discussion

Lately, there has been a critical shift towards comprehensive schooling, underlining impartial admittance to learning valuable open doors for all students, incorporating those with intellectually challenged. These students face various difficulties, especially in understanding accomplishment and cognizance, which significantly obstruct scholastic achievement and social consideration (Kushwaha et al., 2024). Tending to these difficulties through designated perusing intercessions has been a point of convergence of continuous exploration, yet the viability of these interventions stays a subject of discussion. This meta-investigation means to efficiently evaluate the viability of perusing intercessions custom-fitted explicitly for with intellectually challenged children, making inferences from a different scope of worldwide examinations. Thus, it looks to progress hypothetical comprehension and illuminate proof-based rehearses that can upgrade instructive results and in general prosperity for this populace. This study takes on a meta-analysis deal with inspecting the viability of perusing interventions for students with intellectually disabled. Meta-analysis offers a powerful structure for incorporating discoveries from different examinations, taking into

consideration a thorough assessment of intervention results while diminishing the effect of individual review limits and inclinations (Mancin et al., 2024). Students with intellectually disabled frequently experience huge difficulties in obtaining essential proficiency abilities, including phonological mindfulness, translating, familiarity, and appreciation (Samuelsson et al., 2024). Furthermore, lack of awareness of children emotional and psychological well-being in children looked after by the caregivers may fail to fulfill their psychological needs (Sarfaraz et., al 2022). These challenges can have significant complications for their intellectual accomplishment, social combination, and long-haul results (O'Regan et al., 2024). Given the basic job of perusing capability in getting to instructive open doors and partaking completely in the public eye, tending to the special requirements of these students through specialized interventions is need of the time (Agrahari, 2024).

In current years it is observed the improvement of an assortment of perusing intercessions explicitly intended for understudies with intellectual inabilities, mirroring a developing acknowledgment of the significance of individualized and evidence-based informative methodologies (Grindle et al., 2024). These interventions enclose a large number of methodologies, including express guidance, multi-tactile methodologies, assistive innovations, and friend-helped learning, among others (Guedes, 2024). While a portion of these mediations has shown guarantee in further developing understanding results, the variety of approaches and fluctuation in results highlight the requirement for orderly assessment and blend of existing examination (Abella et al., 2024). Albeit individual investigations have given significant bits of knowledge into the viability of Reading interventions for students with intellectual disabilities, the field misses the mark on an extensive amalgamation of evidence to direct experts, specialists, and policymakers (Dunn et al., 2024). Meta-analysis offers a strong strategic way to deal with address this hole by deliberately assembling information from numerous investigations, measuring impact estimates, and recognizing mediators of intercession viability (Fernandez et al., 2021). By orchestrating discoveries from different investigations directed

across different settings and populaces, meta-analysis works with a more nuanced comprehension of intercession impacts and recognizes best practices (Konnyu et al., 2024). A recent study (Yeli et al., 2023) in on intellectually disabled students in Pekanbaru, Indonesia, and investigated the adequacy of discernment and picture support techniques on understanding skills. Albeit the review didn't report a connection coefficient (r esteem), it depended on a correlation of mean scores when the mediation. The outcomes showed that fortifying understudies' insights and using picture support procedures altogether further developed their understanding skills (Yeli et al., 2023). This proposes that visual-based mediations can be especially successful for students with intellectual disabilities, as these understudies frequently benefit from concrete, visual upgrades that guide in handling and grasping data (Yeli et al., 2023). In the Cure & Yucesoy, 2023 review, 71 students with intellectual disabilities were partitioned into gatherings to get Equal Educating (RT) and Deduction Preparing (IT) mediations. The review didn't give express connection information but rather centered around contrasting the viability of the two methodologies (Cure & Yucesoy, 2023). The discoveries uncovered that both RT and IT decidedly affected understanding appreciation, with every strategy contributing distinctively relying upon the understudies' particular requirements (Cure & Yucesoy, 2023). Corresponding Educating, which includes intelligent exchange and divided liability among educators and understudies, was viewed as especially compelling in further developing appreciation by empowering dynamic support and commitment (Hill, 2016). Derivation Preparing, which assists understudies with reaching determinations and making associations inside texts, was likewise useful yet in an alternate part of understanding. This features the significance of choosing fitting intercessions given the particular understanding difficulties faced by students with intellectual disabilities (Hill, 2016). The systematic writing survey inspected phonics-based perusing intercessions for more than 12 years, including 240 understudies. While the review did not give R-values, it featured the positive reaction of students with intellectual disabilities to phonics-based intercessions. Phonics guidance, which centers around showing the connection between sounds

and letters, is essential for understanding the turn of events (Afacan et al., 2018). The survey accentuated that understudies with intellectually disabled can fundamentally benefit from phonics-based techniques, which are fundamental for disentangling abilities. The expansion in distributed examinations on this subject reflects a developing acknowledgment of the significance of phonics in perusing guidance for this populace. In any case, the concentrate likewise calls for proceeding with examination to refine these mediations and guarantee they are open and powerful for all students with intellectual disabilities. Afacan et al., (2018) investigated the effect of multicomponent understanding intercessions, which go past single-expertise guidance like sight word perusing, including 37 understudies across seven examinations. The shortfall of a r esteem proposes that the review zeroed in on the subjective results as opposed to measuring connections between factors (Cure & Yucesoy, 2023). The examination found that multicomponent mediations, which incorporate different parts of perusing guidance like phonics, familiarity, and perception, are more viable than customary single-expertise draws near. This thorough methodology tends to the different advancing necessities of students with intellectual disabilities, giving a more comprehensive improvement in their abilities to understand (Cure & Yucesoy, 2023). The shift towards multi-component intercessions mirrors an advancing comprehension of the intricacy of perusing difficulties looked at by these understudies and the requirement for more coordinated instructing techniques. This study included 40 non-verbal or insignificantly verbal students with intellectual disabilities, zeroing in on a perusing mediation that consolidates Augmentative and Elective Correspondence (AAC) devices (Cure & Yucesoy, 2023). The intervention, which endured a year and a half, underscored phonological mindfulness, translating, sound mixing, letter-sound correspondence, and sight word acknowledgment. Albeit the review didn't report r values, it gave a nitty gritty portrayal of the mediation's plan and anticipated results (Ulriksen et al., 2023). The discoveries highlighted the significance of AAC in working with perusing guidance for non-verbal understudies, who require elective specialized techniques to draw in with understanding

materials. This approach is vital for guaranteeing that understudies with serious correspondence challenges can get to proficiency schooling, subsequently advancing more noteworthy inclusivity (Cure & Yucesoy, 2023). The concentrate additionally featured the requirement for additional examination to assess the drawn-out impacts of AAC-based understanding intercessions (Ulriksen et al., 2023).

The meta-analysis of perusing intercessions for students with intellectual disabilities gives important experiences into the adequacy of various informative procedures (Dessemontet et al., 2021). The outcomes from the examinations summed up the capability of different ways to deal with improved perusing abilities in this populace. The review zeroing in on phonics-based guidance included 30 students with intellectual disabilities and detailed huge upgrades in phonics capacities, with an enormous impact size ($g = 0.85, p < 0.00$). According to Dessemontet et al., (2021) phonics guidance, which underlines the connection between sounds and letters, is central to creating translating abilities fundamental for perusing. The solid impact size proposes that phonics-based interventions are especially viable in improving the abilities to peruse students with intellectual disabilities. This finding is reliable with past exploration that has highlighted the significance of phonics in proficiency guidance, especially for understudies who battle with customary understanding techniques. The huge impact size likewise shows that phonics guidance is not just valuable but possibly extraordinary for students with intellectual disabilities, making it a basic part of understanding intercessions (Dessemontet et al., 2021).

The review including multi-tangible guidance through intuitive read-aloud included 20 students with intellectual disabilities and showed moderate upgrades in understanding abilities ($g = 0.45, p < 0.05$). According to Cuzzo, (2024) Multi-tangible guidance draws in different faculties' visual, hearable, and sensation, which can be especially gainful for students with intellectual disabilities who might experience issues handling data through a solitary methodology. The moderate impact size proposes that while this approach is successful, it may not be essentially as significant as phonics-based guidance. Nonetheless, it remains an important technique, particularly for understudies

who benefit from a captivating and intelligent learning climate (Cuozzo, 2024). The moderate improvement demonstrates that multi-tactile methodologies can supplement different intercessions, offering a more adjusted informative experience that takes care of various learning styles and needs (Cuozzo, 2024).

In the orderly audit of assistive innovation-based directions for post-auxiliary understudies with formative handicaps, 20 understudies with scholarly incapacities were surveyed, showing little yet huge additions in understanding abilities (Cakir-Dilek, 2019). The utilization of assistive innovation, like specialized gadgets and specific programming, offers extra help for understudies with extreme intellectual disabilities. Albeit the impact size was more modest, the meaning of these additions (regardless of whether unassuming) focuses on the significance of innovation in giving admittance to perusing guidance to understudies who could some way or another be rejected (Cakir-Dilek, 2019). This approach is urgent in advancing inclusivity and guaranteeing that all understudies, no matter what their handicaps, have the chance to foster education abilities. The discoveries recommend that while assistive innovation may not deliver emotional upgrades, it assumes a basic part in empowering students with intellectual disabilities to draw in with understanding materials (Cakir-Dilek, 2019).

The concentrate on sound mixing, single-word deciphering, and shared reading interventions included 40 students with intellectual disabilities and announced upgrades in understanding abilities (Ulriksen et al., 2023). These interventions target explicit parts of reading, for example, phonological mindfulness and deciphering, which are much of the time areas of trouble for understudies with intellectual disabilities. The positive results feature the viability of separating and adding guidance to more modest, more sensible assignments that can be dominated over the long run (Ulriksen et al., 2023). This approach lines up with the idea of framework, where understudies are step by step upheld in growing more complicated abilities. The upgrades in perusing abilities recommend that these designated mediations are viable in building the basic proficiency abilities essential for further developed understanding assignments. By zeroing in on unambiguous parts of perusing, these mediations give understudies intellectual

disabilities the devices they need to prevail concerning reading (Ulriksen et al., 2023).

Recommendations

The current study also had some recommendations

1. The current study was from secondary sources such as past studies and articles which leads to reliability and validity issues it is recommended to gather data from primary sources for further studies to deal with reliability and validity issues.
2. It is recommended to focus on phonics-based interventions, as they exhibited huge upgrades in reading abilities. Phonics-based guidance ought to be coordinated into the educational plan, especially at the beginning phases of proficiency training.
3. It is recommended to consolidate multi-tactile educational strategies, for example, interactive read-aloud, to connect with different faculties and upgrade learning. These strategies can supplement phonics-based techniques and take special care of understudies who benefit from a more intelligent and connecting with approach.
4. It is recommended to use assistive innovation to guarantee availability for understudies with extreme intellectual and formative disabilities. Although the effect might be unassuming, assistive advancements offer fundamental help and empower these understudies to partake in understanding guidance.
5. It is recommended to ceaselessly survey and adjust reading interventions in view of continuous understudy progress. Customary evaluations permit teachers to pursue informed choices and exclusive interventions to meet the particular requirements of understudies with scholarly inabilities.

Conclusion

This meta-analysis uncovers the basic job that custom-fitted educational procedures play in improving proficiency abilities inside this populace. The discoveries highlight the viability of phonics-based guidance, which showed the most significant effect on further developing phonics capacities. Multi-tangible methodologies, while yielding moderate additions, offer a drawing-in and extensive strategy that upholds understudies with

assorted advancing requirements. Assistive innovation-based intercessions, however, showing more modest upgrades, are fundamental for giving admittance to proficiency to understudies with extreme challenged childrens, guaranteeing that all understudies have the valuable chance to foster understanding abilities.

The investigation additionally features the progress of evidenced based interventions, for example, sound mixing and single-word translating, which center around building explicit understanding parts. These techniques line up with the rule of the platform, assisting students with intellectual disabilities to get primary proficiency abilities that are significant for the more intricate understanding undertaking.

By and large, the meta-analysis stresses the significance of utilizing an assortment of evidence-based reading interventions to address the exceptional difficulties faced by students with intellectual disabilities . By coordinating these assorted methodologies into instructive practice, teachers can more readily uphold the scholarly turn of events and social consideration of these understudies, eventually adding to their general prosperity and achievement. The bits of knowledge acquired from this examination can illuminate future exploration, strategy making, and educational plans, it is both viable and comprehensive to guarantee that understanding interventions.

Limitations

1. The limitation was observed in that meta-analysis was performed in the current study the cross-sectional design or longitudinal design will be more beneficial to study the impact of variables comprehensively.
2. However, generalizability is another limitation as the studies were comprised of different regions and cultures but not specifically from one culture, it is difficult to generalize the findings of one culture to another.

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