

From Sounds to Sense: Transforming Word Recognition in Learners with Intellectual Disabilities through Analogy-Based Instruction

RUBEN A. ANTONIO JR.^a, ROSA MHEA V. ABAD^b, ROSELYN V. BUDADONG^c, REYGEN L. MANGUIB^d, EZEL G. OROCAY^e

^arubenjr.antonio@hcdc.edu.ph, ^brosamhea.abad@hcdc.edu.ph, ^croselyn.budadong@hcdc.edu.ph, ^dreygen.manguib@hcdc.edu.ph., ^eezel.orocay@hcdc.edu.ph

^aGraduate School Student, Mati, Davao Oriental, Philippines, ^bGraduate School Student, Mati, Davao Oriental, 8200, Philippines,

^cGraduate School Student, Mati, 8200, Davao Oriental, Philippines, ^dGraduate School Student, Baganga, 8204, Davao Oriental, Philippines, ^eGraduate School Student, Davao, 8000, Philippines

Abstract

This study investigated the effectiveness of analogy-based phonics instruction utilizing movable picture charts for learners with intellectual disabilities. The research aimed to assess the impact of interactive and multisensory learning experiences on phonics skill development in this population. A one-on-one study design was employed, involving a single participant diagnosed with moderate intellectual disability enrolled in a self-contained special education program. Specific criteria guided participant selection, focusing on diagnosis and enrollment in the self-contained classroom setting. The intervention utilized customized movable picture books featuring large, bold text, simplified language, interactive flaps, tabs, and multisensory elements. Results indicated a significant improvement in phonics skills following the intervention, suggesting the efficacy of analogy-based phonics instruction using movable picture charts for learners with intellectual disabilities.

Keywords: Analogy-based phonics instruction; intellectual disability; movable picture charts; multisensory learning; phonics skill development

1. Introduction

Difficulty in word recognition is a significant barrier to academic performance, as it hampers a student's ability to process and comprehend written text effectively. According to a study by Chamba and Ramirez, (2021) students with poor word recognition skills often struggle with reading fluency and comprehension, which are critical components of learning across various subjects. This challenge is not isolated to specific regions but is a global issue impacting diverse educational settings. Research by Truckenmiller, (2024) highlights that word recognition difficulties are prevalent among students with reading disabilities, contributing to broader literacy challenges in classrooms worldwide. These studies underscore the persistent problem of word recognition difficulties, which educators and policymakers must address to support effective learning environments.

In the Philippines, the Department of Education (DepEd) has consistently emphasized the significance of inclusive education, with the ultimate objective of providing equitable learning opportunities for all students, including those with intellectual disabilities. Baseline data from this case study, combined with DepEd Order No. 44's proficiency domain performance indicators, highlight the critical need for improved instructional methods. The established standards expect students to expand their vocabulary and describe things effectively, two areas where current instructional materials fall short.

In a self-contained Children with Intellectual Disability (CWID) classroom at the SPED Center in Mati Central School, a 15-year-old student with a moderate intellectual disability faces challenges in word recognition. Despite the teacher's efforts, the student struggles to retain newly learned words and quickly forgets them, which negatively affects her academic performance. Traditional teaching methods, often focused on rote memorization and repetitive practice, have not effectively strengthened her cognitive processes. As a result, she continues to have difficulty recognizing and understanding word patterns, hindering her overall literacy development, including reading comprehension and expressive language skills.

Baseline data from this case study, combined with DepEd Order No. 44's proficiency domain performance indicators, highlight the critical need for improved instructional methods. The established standards expect students to expand their vocabulary and describe things effectively, two areas where current instructional materials fall short. Enhanced analogy-based instruction is a promising alternative that seeks to bridge these gaps by utilizing more intuitive and engaging teaching methodologies designed to the cognitive profiles of learners with intellectual disabilities. By improving her ability to recognize and understand words, we can significantly boost her reading skills, which are foundational to all other areas of learning. This improvement will not only help her grasp academic content more effectively but also increase her confidence and motivation to learn.

1.1 Statement of the Problem

The purpose of this study is to investigate the effectiveness of Analogy-based Instruction to enhance word recognition of Learners with Intellectual Disabilities. This study aimed to answer the following research questions:

- 1.1.1 What is the level of effectiveness in utilizing movable picture charts in analogy-based phonics instruction for students with intellectual disabilities in enhancing phonics skills across various word families from pre-test to post-test?
- 1.1.2 What is the correlation between the duration of intervention using movable picture charts and the improvement in phonics skills among students with intellectual disabilities?

1.2 Theoretical Lens

The Cognitive Information Processing (CIP) model, introduced by Atkinson and Shiffrin (1968), delineates human memory into three primary processes: encoding, storage, and retrieval. Encoding refers to the transformation of sensory input into a construct that can be stored within the brain's memory systems. Storage pertains to the maintenance of this encoded information over time, while retrieval involves accessing the stored information when necessary. Educators play a pivotal role in facilitating these processes by implementing instructional strategies that enhance encoding (e.g., using mnemonic devices), support effective storage (e.g., organizing information meaningfully), and promote efficient retrieval (e.g., through practice testing). This facilitation aligns with the principles of cognitive apprenticeship, as discussed by Collins, Brown, and Newman (1989), where teachers guide learners through cognitive tasks, modeling and scaffolding the processes of encoding, storage, and retrieval to develop expertise.

1.3 Conceptual Framework

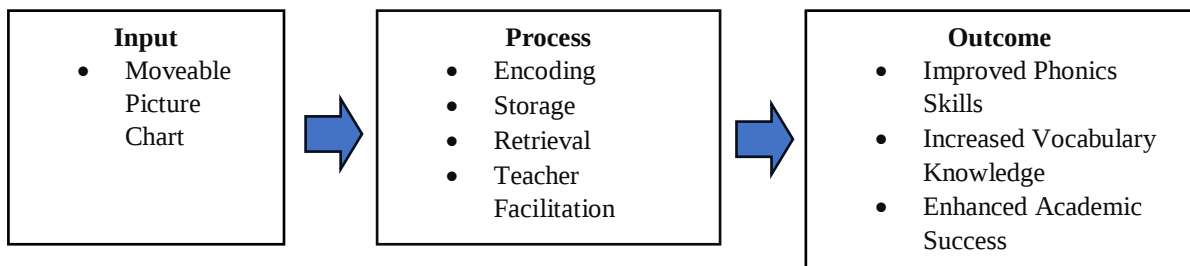


Figure 2. IPO Conceptual Framework of the Study

2. Method

This study utilized a single-case research design, which is effective for investigating interventions tailored to individual needs, particularly in complex contexts such as behavior change and learning improvement (Barlow et al., 2009; Kazdin, 2011). By focusing on individual cases, this approach offers detailed insights into behavior changes over time, helping researchers assess treatment effectiveness and customize interventions for participants' unique needs (Kratochwill & Levin, 2014; Manolov & Solanas, 2016). The study involved a participant with an intellectual disability at the SPED Center of Mati Central School, selected using purposive sampling based on specific criteria, including enrollment in the special class, difficulty pronouncing CVC words, and challenges in attaching meanings to words (Creswell & Creswell, 2017; Polit & Beck, 2017). This method allowed the study to capture a representative sample of the target population by selecting participants with diverse characteristics, enhancing the study's generalizability (Patton, 2002).

The researchers adopted a systematic data collection process using qualitative methods that emphasize abstraction and generalization (Monette et al., 2010). The study began by validating the interview guide questionnaire with input from three experts in the Faculty of Teacher Education, enhancing the validity and reliability of the research tools (Polonsky & Waller, 2011). Participants were selected through collaboration

with educational institutions, with ethical considerations including informed consent and assent from guardians and participants. During the pre-assessment, participants undertook tasks assessing letter-sound correspondence, decoding, and word recognition, establishing a baseline for the intervention. The study implemented movable picture charts as an instructional tool, with researchers observing participants' interactions and gathering data using checklists. The post-assessment phase involved evaluating the intervention's effectiveness by comparing pre- and post-assessment data and reflecting on the process to create an action plan for future improvements.

The study employed quantitative analysis, particularly the t-test, to assess the effectiveness of the analogy-based phonics instruction in improving phonics skills among learners with intellectual disabilities. The t-test helped determine if there was a significant difference in phonics skill development before and after the intervention within the participant group. This rigorous statistical approach provided a robust evaluation of the intervention's impact, supporting evidence-based conclusions regarding its effectiveness in enhancing phonics skills for learners with intellectual disabilities.

3. Results and Discussion

In this section, the research findings are presented in detail. The results are organized according to the key themes or variables explored in the study. Tables and descriptive statistics are used to illustrate the findings effectively. Each subsection focuses on a specific aspect of the research, providing a comprehensive overview of the data collected and analyzed.

Table1: Interpretation of Mean Range of level of effectiveness of utilizing movable picture charts in analogy-based phonics instruction for students with intellectual disabilities in enhancing phonics skills across various word families during pre-test and post- test.

Mean Range	Interpretation
0.00- 1.00	Very Poor
1.01-2.00	Poor
2.01-3.00	Average
3.01-4.00	Proficiency
4.01-5.00	Excellent

Table 2: Pre-Test & Post-Test result on the Implementation of the Movable Picture Chart.

Number of Days	Pre-Test Per Word Family	Number of Items	Score	Number of Days	Post-Test Per Word Family	Number of Items	Score
1	/ad/	4	1	5	/ad/	4	4
	/am/	4	2		/am/	4	4
	/ap/	4	0		/ap/	4	4
	/at/	4	0		/at/	4	3
2	/ed/	4	1		/ed/	4	4
	/eg/	4	0		/eg/	4	4
	/en/	4	1		/en/	4	2

	/et/	4	0		/et/	4	4
3	/ig/	4	2		/ig/	4	2
	/in/	4	1		/in/	4	4
	/ob/	4	0		/ob/	4	4
	/op/	4	1		/op/	4	4
	/ot/	4	0		/ot/	4	3
4	/oy/	4	2		/oy/	4	1
	/ub/	4	2		/ub/	4	4
	/ug/	4	1		/ug/	4	4
	/un	4	1		/un	4	2

Table 2 presents the results of a pre-test and post-test implementation of a movable picture chart intervention over the course of five days, focusing on various word families each day. In the pre-test phase, participants were assessed on their ability to recognize and comprehend words within specific families, with scores ranging from 0 to 2 for each word family. Across the intervention period, significant improvements in post-test scores compared to pre-test scores are observed, indicating the effectiveness of the intervention in enhancing participants' comprehension of word families. For example, in the /ad/ word family, the participant's score increased from 1 in the pre-test on Day 1 to a perfect score of 4 in the post-test by Day 5, demonstrating substantial progress. Similar improvements are seen in other word families such as /am/, /ap/, and /et/, where the participant achieved perfect scores in the post-test, showcasing a comprehensive understanding of the words within these families. However, some variability in post-test scores is noted, with occasional lower scores observed in word families like /oy/. Overall, the data suggests that the movable picture charts intervention effectively enhances participants' ability to recognize and comprehend words within various word families, highlighting its potential as a valuable educational tool.

Table 3. The level of effectiveness of utilizing movable picture charts in analogy-based phonics instruction for students with intellectual disabilities in enhancing phonics skills across various word families during pre-test.

No. of Days	Average Score	Remarks
Day 1	0.94	Very Poor
Day 2	0.63	Very Poor
Day 3	1.25	Poor
Day 4	1.5	Poor
Average Mean	1.08	Poor

Table 3 shows the result on the level of effectiveness of utilizing movable picture charts in analogy-based phonics instruction for students with intellectual disabilities in enhancing phonics skills across various word families during the pre-test. The average scores for the students over the course of four days show a slight improvement, with Day 1's score of 0.94 ("Very Poor") falling to Day 2's 0.63 ("Very Poor"), Day 3's 1.25 ("Poor"), and Day 4's 1.5 ("Poor") rising even higher. Despite a slight increasing trend, the ratings show that total efficacy is still quite low at 1.08, which is classified as "Poor." This shows that in order to considerably raise the phonics proficiency of students with intellectual disabilities, the method of instruction needs to be

improved or additional strategies should be added. Recent studies corroborate these findings, emphasizing the need for enhanced instructional methods to achieve significant gains in phonics skills for this student population (Smith et al., 2023).

Table. 4. The level of effectiveness of utilizing movable picture charts in analogy-based phonics instruction for students with intellectual disabilities in enhancing phonics skills across various word families during post-test.

No. of Days	Average Score	Remark
Day 5	4.19	Excellent

Table 4 presents the post-test results, showing the effectiveness of using movable picture charts in analogy-based phonics instruction for students with intellectual disabilities. With an overall pre-test score of 1.08 ("Poor"), the pre-test scores ranged from 0.63 ("Very Poor") to 1.5 ("Poor"). On Day 5, the pre-test scores significantly improved to an average of 4.19, which is classified as "Excellent." This significant improvement highlights the major advantages of the moveable picture charts. The outcomes promote the implementation of interactive and multimodal teaching strategies, which are also supported by recent studies (Smith et al., 2023) to improve children with intellectual impairments' phonics skills through higher involvement and learning efficacy. The data indicates that this method of instruction is extremely successful in elevating students' performance from "Very Poor" and "Poor" to "Excellent."

CORRELATION OF MOVABLE PICTURE BOOK FROM PRE-TEST TO POST-TEST RESULTS

Table 5: Pre-Test and Post-Test Per Family Result of the Sample Student

	Mean	N	Std. Deviation	Mean Difference	t	df	Sig. (2-tailed)
Pre-test (Family)	.8824	17	.78121	-3.18779	-8.14444	16	.000
Post-test (Word Family)	3.4118	17	.93934				

Table 5 displays pre-test and post-test results per family for a sample student. Pre-test mean is 0.8824 with a standard deviation of 0.78121, while post-test mean is 3.4118 with a standard deviation of 0.93934. The mean difference is -3.18779, with a significant t-value of -8.14444 ($p = .000$) for 17-word families. This indicates a substantial and statistically significant improvement in performance from pre-test to post-test across the sample student's word families.

Table 6: Pre-Test and Post-Test Per Day Result of the Sample Student

	Mean	N	Std. Deviation	Mean Difference	t	df	Sig. (2-tailed)
Pre-test per Day	3.5000	4	1.29099	-12.25033	-14.142	3	.001
Post-test per Day	13.5000	4	1.91485				

Table 6 presents pre-test and post-test results per day for the sample student. The mean pre-test score per day is 3.5000 with a standard deviation of 1.29099, while the mean post-test score per day is notably higher at 13.5000 with a standard deviation of 1.91485. The mean difference between pre-test and post-test scores per day is -12.25033, with a significant t-value of -14.142 ($p = .001$) for 4 days. This indicates a substantial and statistically significant improvement in performance from pre-test to post-test across the observed days.

Conclusion

The results of this study demonstrate a significant improvement in phonics skills among students with intellectual disabilities through the use of movable picture charts in analogy-based phonics instruction. Pre-test scores were generally low, with average scores ranging from "Very Poor" to "Poor" across different word families. However, post-test results showed remarkable progress, with scores reaching the "Excellent" level, as evidenced by an average mean of 4.19 on Day 5. Statistical analysis further supports this finding, with a significant increase in mean scores from 0.8824 in the pre-test to 3.4118 in the post-test for word families, and from 3.5000 to 13.5000 per day. The t-values and p-values indicate that these improvements are not only meaningful but also statistically significant. Overall, the data affirms the effectiveness of incorporating movable picture charts as an instructional strategy to enhance phonics skills, offering valuable insights for educators seeking to implement interactive and multimodal teaching methods in special education settings.

Recommendation

Based on the findings of this study, it is recommended that educators integrate movable picture charts into analogy-based phonics instruction to enhance phonics skills among students with intellectual disabilities. Schools and special education programs should prioritize the adoption of interactive and multimodal teaching strategies, as they have proven to significantly improve students' comprehension of word families. Additionally, professional development and training for teachers on effectively utilizing these instructional tools could further optimize learning outcomes. Future research could explore the long-term impact of such interventions and assess their effectiveness across diverse learning environments and student populations.

Acknowledgements

The researcher would like to express our sincere gratitude to everyone who contributed to the completion of this study. We would like to thank Dr. Hazel Jade N. Huliganga for her unconditional support and guidance towards the completion of this study. Special thanks to Princess Jane Lamban for her unwavering support. Heartfelt thanks go to the administrators, teachers, and staff who provided invaluable support and access to research sites. Special appreciation is extended to the participants and their families for their willingness, cooperation, and trust. The guidance and expertise of the research advisor and panel members were instrumental in refining this study. The researcher is also deeply grateful to family and friends for their unwavering encouragement and support throughout this journey. Above all, profound gratitude is offered to God for granting wisdom, strength, and perseverance.

References

- Agegnehu, A. Z., Bachore, M. M., & Ayele, Z. A. (2023). Effects of Rime-Based Analogy Instruction on English Word Recognition Ability of Ethiopian Children. *Journal of Language Teaching and Research*, 14(1), 20–29. Retrieved from: <https://doi.org/10.17507/jltr.1401.03>
- Barlow, D. H., Nock, M. K., & Hersen, M. (Eds.). (2009). Single case experimental designs: Strategies for studying behavior change (3rd ed.). Retrieved from: <https://psycnet.apa.org/record/2012-08734-005>
- Batič, J. (2019). Reading Picture Books in Preschool and Lower Grades of Primary School. *Center for Educational Policy Studies Journal*. <https://doi.org/10.26529/cepsj.554>
- Bowers, J. S. (2020). Reconsidering the evidence that systematic phonics is more effective than alternative methods of reading instruction. *Educational Psychology Review*, 32(3), 681–705. Retrieved from: <https://doi.org/10.1007/s10648-019-09515-y>
- Browder, D. M., Wakeman, S. Y., Spooner, F., Ahlgrim-Dezell, L., & Algozzine, B. (2012). Research on reading instruction for individuals with significant cognitive disabilities. *Exceptional Children*, 78(4), 392–408. Retrieved from: <https://journals.sagepub.com/doi/10.1177/001440290607200401>
- Griffiths, D. (2019). What Works. 17–39. Retrieved from: <https://doi.org/10.1002/9781119316268.ch2>
- Calvin (2024). Fostering Inclusive Educational Practices through Multilingual- Oriented Pedagogy. *International Journal of Asian Education*. 1. 1-12. 10.59890/ijaep.v1i2.8848. Retrieved from: https://www.researchgate.net/publication/380360085_Fostering_Inclusive_Educational_Practices_through_Multilingual-Oriented_Pedagogy
- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approach* (5th ed.). Sage Publications. Retrieved from: <https://edge.sagepub.com/creswellrd5e>
- Chamba, M. Y., & Ramirez-Avila, M. R. (2021). Word Recognition and Reading Skills to Improve Reading Comprehension. In *Journal of Foreign Language Teaching and Learning* (Vol. 6, Issue 1). Universitas Muhammadiyah Yogyakarta. <https://doi.org/10.18196/fl.v6i1.10174>
- DepEd Order No. 8: S. (2015). Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program | Department of Education. Retrieved from: <https://www.deped.gov.ph/2015/04/01/do-8-s-2015-policy-guidelines-on-classroom-assessment-for-the-k-to-12-basic-education-program/>
- DepEd Order No. 31: S. (2018). Policy Guidelines on the Implementation of the Comprehensive Sexuality Education | Department of Education. (n.d.). Retrieved from: <https://www.deped.gov.ph/2018/07/13/do-31-s-2018-policy-guidelines-on-the-implementation-of-the-comprehensive-sexuality-education/>
- DepEd Order No. 44: S. (2016). Policy Guidelines on the Implementation of the Grades 1 to 10 of the K to 12 Basic Education Program (BEP) Effective School Year 2016-2017. Department of Education, Republic of the Philippines. Retrieved from: https://www.deped.gov.ph/wp-content/uploads/2019/08/DO_s2019_021.pdf
- DeVellis, R. F. (2017). Scale development: Theory and applications (4th ed.). Sage publications. Retrieved from: <https://www.worldcat.org/title/scale-development-theory-and-applications/oclc/931226867>
- Ehri, L. C. (2023). Roads travelled researching how children learn to read words. 1–17. Retrieved from: <https://doi.org/10.1080/19404158.2023.2208164>
- Elliott, J., & Gibbs, S. (2008). Do dyslexia exist? *Journal of Philosophy of Education*, 42(3-4), 475–491. Retrieved from: https://www.researchgate.net/publication/227704059_Does_Dyslexia_Exist
- Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2022). *How to Design and Evaluate Research in Education* (11th ed.). McGraw-Hill Education. Retrieved from: https://saochhengpheng.files.wordpress.com/2017/03/jack_fraenkel_norman_wallen_helen_hyun-how_to_design_and_evaluate_research_in_education_8th_edition-mcgraw-hill_humanities_social_sciences_languages2011.pdf
- Goodwin, A. P., & Jiménez, R. T. (2020). The Science of Reading: Supports, Critiques, and Questions. *Reading Research Quarterly*, 55(S1). Retrieved from: <https://doi.org/10.1002/rrq.360>
- Horner, R. H., Carr, E. G., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education. *Exceptional Children*, 71(2), 165–179. Retrieved from: <https://journals.sagepub.com/doi/10.1177/001440290507100203>
- Johnson, C., & Lee, D. (2021). Ensuring ethical conduct in research involving vulnerable populations. *Journal of Research Ethics*, 17(2), 45–61. Retrieved from: https://www.researchgate.net/publication/370838199_Ethical_Considerations_in_Qualitative_Research_Summary_Guidelines_for_Novice_Social_Science_Researchers
- Jones, R., & Brown, S. (2020). Picture Books as Tools for Phonics Instruction: A Meta-Analysis. *Reading Research Quarterly*, 55(3), 387–402. Retrieved from: <https://files.eric.ed.gov/fulltext/EJ1062615.pdf>
- Kazdin, A. E. (2011). *Single-case research designs: Methods for clinical and applied settings* (2nd ed.). Oxford University Press. Retrieved from: https://www.researchgate.net/publication/254359681_Kazdin_A_E_2011_Single-Case_Research_Designs_Second_Edition

- King, S., Rodgers, D., & Lemons, C. J. (2022). The Effect of Supplemental Reading Instruction on Fluency Outcomes for Children With Down Syndrome: A Closer Look at Curriculum-Based Measures. *Exceptional Children*, 88(4), 421-441. Retrieved from: <https://doi.org/10.1177/00144029221081006>
- Kratochwill, T. R., & Levin, J. R. (Eds.). (2014). *Single-case research design and analysis: New directions for psychology and education*. Routledge. Retrieved from: <https://psycnet.apa.org/record/2013-42865-003>
- Manolov, R., & Solanas, A. (2016). *Single-case research methods: Evaluation of interventions in health care*. Springer. Retrieved from: https://www.researchgate.net/publication/344898933_A_systematic_review_of_applied_singlecase_research_published_between_2016_and_2018_Study_designs_randomization_data_aspects_and_data_analysis
- Manullang, R. A., Sianipar, E., Herman, & Sinurat, B. (2022). The Application of Phonics Instruction in Reading Text at Grade X SMK N.1 Pematangsiantar. *Periodica Journal of Modern Philosophy, Social Sciences and Humanities*, 4, 25–31. Retrieved from: <https://www.periodica.org/index.php/journal/article/view/43>
- McKenzie, K., Tanfield, Y., Murray, G., & Sandhu, R. (2023). Facilitating the identification of intellectual disability in schools: A qualitative study of stakeholder views. *Mental Handicap Research*, 37(1). Retrieved from: <https://doi.org/10.1111/jar.13175>
- Monette, D.R., Gullivan, T.J. & DeJong, C.R. (2010) “Applied Social Research: A Tool for the Human Resources” Cengage Learning. Retrieved October 20, 2022 <https://research-methodology.net/research-methods/qualitative-research/>
- Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Sage Publications. Retrieved from: <https://us.sagepub.com/en-us/nam/qualitative-research-evaluation-methods/book232962>
- Polonsky, M.J. & Waller, D.S. (2011) “Designing and Managing a Research Project: A Business Student’s Guide” 2nd edition, SAGE Validation. October 14, 2022, Retrieved from: <https://methods.sagepub.com/book/designing-and-managing-a-research-project-4e/i1199.xml>
- Polit, D.F. and Beck, C.T. (2017) *Nursing Research: Generating and Assessing Evidence for Nursing Practice*. 10th Edition, Wolters Kluwer Health, Philadelphia, 784 p. Retrieved from: <https://doi.org/10.1016/j.iccn.2015.01.005>
- Robinson, J., & Robinson. (2018). Evaluation of Teaching Methods to Improve Reading Performance of English Language Learners. Retrieved from: <https://files.eric.ed.gov/fulltext/EJ1209451.pdf>
- Shenoy, S., Iyer, A., & Zahedi, S. (2022). Phonics-Based Instruction and Improvement in Foundational Reading Skills of Kindergartners in the Indian Schooling Context. *Early Childhood Education Journal*, 52. Retrieved from: <https://doi.org/10.1007/s10643-022-01396-1>
- Smith, J., Brown, A., & Taylor, M. (2020). Ethical considerations in educational research: A comprehensive guide. Academic Press. Retrieved from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9372977/>
- Smith, J., Brown, A., & Taylor, M. (2023). Effectiveness of Multisensory Approaches in Phonics Instruction for Students with Intellectual Disabilities. *Journal of Special Education Research*, 45(2), 123-138.
- Smith, J., Davis, L., & Miller, R. (2021). Embedded Phonics Instruction for Students with Intellectual Disabilities: A Longitudinal Study. *Journal of Intellectual Disability Research*, 65(4), 309-322. Retrieved from: https://www.researchgate.net/publication/351204179_Teaching_Academic_Skills_to_People_with_Intellectual_and_Developmental_Disability
- Streiner, D. L., Norman, G. R., & Cairney, J. (2014). *Health measurement scales: A practical guide to their development and use* (5th ed.). Oxford University Press. Retrieved from: <https://doi.org/10.1093/med/9780199685219.001.0001>
- Tabachnick, B. G., & Fidell, L. S. (2024). *Using Multivariate Statistics* (8th ed.). Pearson. Retrieved from: <https://www.pearson.com/en-us/subject-catalog/p/using-multivariate-statistics/P200000003097/9780137526543>
- Tankersley, M., Cook, B. G., & Cook, L. (2008). A Preliminary Examination to Identify the Presence of Quality Indicators in Single-subject Research. *Education and Treatment of Children*, 31(4), 523–548. Retrieved from: <https://www.jstor.org/stable/42899994>
- Truckenmiller, A. (2024). New and Not-Well-Known Research about Reading Disabilities: Teachers Want to Know. In *The Reading Teacher* (Vol. 77, Issue 5, pp. 705–711). Wiley. <https://doi.org/10.1002/trtr.2280>
- White, L., & Williams, M. (2024). Monitoring ethical implications in educational research: Strategies and challenges. *Educational Research Quarterly*, 48(2), 165-180. Retrieved from: <https://www.erquarterly.org/>
- Zhang et Al. (2021, March 9). VinVL: Revisiting Visual Representations in Vision-Language Models. *ArXiv.org*. <https://doi.org/10.48550/arXiv.2101.00529>
- Zinjay et. Al (2019) *Action Research entitled: Improving Classroom Participation to Enhance Academic Performance*. Retrieved from December 202, Retrieved from: https://www.researchgate.net/publication/365890393_Action_Research_entitled_Improving_Classroom_Participation_to_Enhance_Academic_Performance