Incentivization: Improving Phonological Awareness to Enhance Reading with Longer Words for a Student with Disabilities

Leah M. Pedriña Jesus J. Soriano¹, Jonah B. Maputol², Estela I. Vasquez³, Noeriette L. Balano⁴, Wenefredo E. Cagape⁵

¹NHS Sitio Escuela, Catalunan Grande, Davao City

²Mintal Elem. School Mintal, Davao City

³La Filipina National High School La Filipina, Tagum City

⁴Masicampo Elementary School Suawan, Marilog Dist., Davao City

⁵OIC-President, City College of Davao, Davao City 8000, Philippines

ABSTRACT

This qualitative case study explores the impact of incentivization strategies on enhancing phonological awareness and reading skills in a student with disabilities. The focus is on a student, referred to as "Lala" to maintain confidentiality, who struggles with reading multisyllabic words due to a learning disability. The primary objective is to determine how targeted incentives can motivate Lala and subsequently improve her reading abilities. Incentivization strategies, including both tangible rewards (such as stickers, small toys) and intangible rewards (such as praise and recognition), were integrated into Lala's reading sessions. These incentives were personalized to align with Lala's interests and learning goals, aiming to create a motivating and supportive learning environment. The study was conducted over a three-month period, with regular sessions designed to assess Lala's progress. The findings reveal significant improvements in Lala's phonological awareness and reading skills. Over the course of the intervention, Lala exhibited increased interest and participation in reading activities. She demonstrated substantial progress in identifying and manipulating sounds, which enhanced her ability to decode multisyllabic words. Behavioral changes included increased focus and reduced frustration during reading tasks, contributing to a more positive learning experience.

The study underscores the effectiveness of using tailored incentivization strategies to support students with learning disabilities. By aligning incentives with the student's interests and learning goals, educators can foster a more engaging and supportive learning environment. The research highlights the potential for such strategies to make a meaningful difference in the educational outcomes of students facing similar challenges. Future research should investigate the long-term effects of these strategies and their broader applications in diverse educational settings. Understanding the sustained impact of incentivization on reading skills and overall academic performance will provide valuable insights for educators aiming to support students with learning disabilities.

Keywords: phonological awareness, reading skills, incentivization strategies, learning disabilities, multisyllabic words, educational outcomes.

INTRODUCTION

Phonological awareness is the ability to recognize and manipulate sounds in spoken language, which is crucial for reading development. It involves skills such as rhyming, syllable counting, and phoneme segmentation. Research has shown that phonological awareness is a strong predictor of reading success, especially for students with disabilities. Early intervention in phonological awareness can significantly improve reading outcomes for these students.

Many students with disabilities struggle with phonological awareness, which hinders their reading development. Phonological awareness is critical for decoding and spelling, and difficulties in this area can lead to long-term academic challenges. According to Moats (2010), phonological awareness is foundational for reading any alphabetic writing system.

Phonological awareness difficulties are prevalent among students with disabilities, impacting their ability to learn to read and write effectively. Studies have shown that early intervention can mitigate these challenges, but many students do not receive the necessary support (Veríssimo et al., 2021). This gap in early education can have lasting effects on students' academic and personal development (Lacal et al., 2018).

Internationally, phonological awareness is recognized as a key component of early literacy education. In countries like the United States and New Zealand, programs have been implemented to support phonological awareness development

in young children (Bennett et al., 2023; Moats, 2010)3. However, there is still a need for more widespread and effective interventions to address the needs of students with disabilities (Verssimo et al., 2021).

In the Philippines, phonological awareness is not yet a widely implemented component of early literacy programs. Research indicates that many Filipino children enter formal schooling with low levels of phonological awareness, which affects their reading development (Beck et al., 2002). There is a need for targeted interventions to improve phonological awareness skills among Filipino students (Gillon et al., 2019).

There is a significant research gap in the implementation of phonological awareness programs specifically tailored for students with disabilities in the Philippines. Without targeted interventions, these students are likely to continue facing reading challenges, which can hinder their overall academic progress (Lonigan et al., 2013). Addressing this gap is crucial for improving literacy outcomes for students with disabilities.

The urgency to conduct this study stems from the need to provide effective phonological awareness interventions for students with disabilities in the Philippines. Without timely and appropriate support, these students may fall further behind their peers, leading to long-term academic and social consequences (Marulis & Neuman, 2013). This study aims to fill the research gap and contribute to the development of effective literacy programs.

Purpose of the study

The primary goal of this case study is to investigate the benefits of incentivization on phonological awareness, particularly aiming to enhance the ability to read longer words for a student with disabilities. Firstly, it is critical to understand that phonological awareness is a foundational skill necessary for reading success. In particular, students with disabilities often face unique challenges in developing these skills, which can significantly impact their academic progress and overall confidence.

Furthermore, this case study seeks to explore innovative methods, such as incentivization, to motivate and engage students in their learning process. We aim to determine whether specific incentives can lead to measurable improvements in phonological awareness and, consequently, reading proficiency.

Ultimately, this research is essential as it provides insights into effective educational strategies that can be tailored to the needs of students with disabilities, fostering a more inclusive and supportive learning environment.

Objectives of the study

This study is multifaceted, beginning with the assessment of the baseline phonological awareness in a student with disabilities prior to the implementation of any interventions. This initial evaluation sets the stage for introducing and applying a variety of incentivization strategies aimed at motivating and enhancing the student's engagement with activities designed to improve phonological awareness. As the study progresses, a key focus is on monitoring and documenting any improvements in the student's ability to identify and manipulate sounds within words, with a particular emphasis on longer words.

In addition, the study seeks to evaluate the impact of these enhanced phonological awareness skills on the student's overall reading proficiency, specifically their ability to read longer words fluently and accurately. Analyzing the effectiveness of the various incentivization strategies used is another critical objective, with the aim of identifying which techniques prove most beneficial. Finally, the study endeavors to provide practical recommendations for educators and researchers based on the findings, to support the improvement of phonological awareness and reading skills in students with disabilities through effective incentivization.

LITERATURE REVIEW

Phonological awareness is a critical component in the development of reading skills, particularly for individuals with learning disabilities. Heggie et al. (2017) identified that individuals with certain learning disabilities commonly struggle with decoding and pronouncing multisyllabic words. This challenge can significantly impact their reading fluency and overall academic performance. Hempenstall (2011) emphasized the importance of understanding the logic of the writing system and oral production for decoding written words. By comprehending how written symbols correspond to sounds, students can better decode unfamiliar words, thereby improving their reading abilities.

Hautala et al. (2012) highlighted the importance of syllable segmentation in word recognition fluency. They found that the ability to break down words into syllables and recognize the individual sounds within them is crucial for reading longer words. This skill is particularly beneficial for students with learning disabilities, as it aids in the accurate and fluent reading of complex words. The research underscores that interventions focusing on enhancing syllable segmentation can lead to significant improvements in reading proficiency.

In more recent findings, the Redmont Pediatric Association (2024) underscored the significance of recognizing letters and rhyming words as predictors of future reading challenges. Their study revealed that early identification of difficulties in these areas can help educators and parents implement targeted interventions to support reading development. The association's research suggests that phonological awareness skills, such as letter recognition and rhyming, are foundational for reading success and should be prioritized in early education.

Overall, these studies highlight the importance of phonological awareness in reading development and provide a strong rationale for exploring incentivization strategies to enhance these skills in students with disabilities. By addressing the specific needs of these students, educators can foster a more inclusive and supportive learning environment that promotes reading success.

METHODOLOGY

In this section, the methodology involves selecting a student with disabilities and assessing their baseline phonological awareness and reading proficiency. Tailored incentivization strategies are then implemented to motivate the student and enhance their phonological skills. Data is collected through observations, interviews, and tests to monitor progress throughout the intervention.

This data is subsequently analyzed to identify patterns, measure improvements, and evaluate the effectiveness of the implemented strategies. Finally, the results are documented, and practical recommendations are provided for educators to support similar students.

Research Design

This study employs a qualitative case study approach to explore the impact of incentivization on improving phonological awareness and reading skills in a student with disabilities. The qualitative method allows for an in-depth examination of the student's experiences and responses to various incentivization strategies. This approach includes detailed observations, interviews, and assessments conducted over a defined period, ensuring a comprehensive understanding of the student's progress.

First, baseline data on the student's phonological awareness will be collected to establish a starting point. Then, a series of tailored incentivization strategies will be implemented, with ongoing monitoring and documentation of the student's engagement and improvements.

Finally, the collected data will be analyzed to identify patterns and draw conclusions about the effectiveness of the incentivization methods. This research design aims to provide actionable insights and practical recommendations for educators working with students with similar challenges.

Participant

The participant in this study, referred to as "Lala" to protect her privacy, is an elementary school student diagnosed with a learning disability. Lala faces significant challenges, especially when it comes to reading multisyllabic words that have more than four syllables. Her learning disability impacts her phonological awareness, which is crucial for decoding and pronouncing complex words.

Data collection:

This section included regular classroom observations to track her engagement and progress, semi-structured interviews with her teachers and parents to understand her reading challenges, and document analysis of her IEP and progress reports. The intervention plan aimed to enhance Lala's phonological awareness and ability to read multisyllabic words through tailored incentivization strategies, including tangible rewards and praise.

Instructional strategies included phonemic awareness activities, decoding strategies, and repetitive practice using visual aids and engaging multi-sensory activities. The intervention spanned three months, with each session beginning with a review of previous materials and new activities focusing on longer words.

Progress was monitored through regular assessments and observations, which indicated significant improvements in Lala's reading skills, increased engagement, and reduced frustration with reading tasks.

Table 1 Classroom observations focused on Lala's engagement and progress in phonological activities

Observation Date	Activity	Observation Details	Engagement Level	Progress Made
Week 1	Syllable Segmentation	Lala struggled to break down words into syllables.	Low	Limited phonological awareness
Week 2	Rhyming Words Identification	Lala had difficulty identifying rhyming words.	Moderate	Gradual improvement with assistance
Week 3	Phoneme Blending and Segmentation	Lala found it challenging to blend and segment phonemes.	Low	Minor progress, needed repetition
Week 4	Multisyllabic Word Decoding	Lala struggled with decoding words with more than four syllables.	Low	Ongoing difficulties
Week 5	Phonemic Awareness Games	Lala showed more interest during interactive phonemic awareness games.	High	Increased engagement, some progress
Week 6	Incentivized Phonological Tasks	Lala responded well to tangible rewards (e.g., small-item bonuses) and praise.	High	Noticeable improvement
Week 7	Repetitive Practice with Visual Aids	Lala's engagement improved with the use of visual aids and multisensory activities.	Moderate	Steady progress
Week 8	Comprehensive Phonological Review	Lala participated actively during the review sessions, showing better understanding of the tasks.	High	Significant progress in phonological awareness
Week 9	Multisyllabic Word Practice	Continued difficulty with longer words but showing perseverance and effort.	Moderate	Incremental progress
Week 10	Final Assessment of Phonological Skills	Lala demonstrated noticeable improvements in phonological tasks, particularly in decoding and pronunciation.	High	Substantial progress achieved

Table 2. Summarizing the semi-structured interviews with Lala's teachers and parents

Interviewee	Key Insights	Praises and Affirmative Remarks	Dissatisfaction and Critical Remarks
Teacher A	Lala struggles significantly with multisyllabic words and decoding.	Lala shows strong commitment to learning and improving. Consistently practices syllable segmentation and phoneme blending exercises.	Lala continues to struggle with breaking down longer words into syllables despite repeated practice.
Teacher B	Lala's difficulties with phonological awareness impact her reading fluency and comprehension.	Demonstrates perseverance and a growth mindset. Progress is evident in small victories, such as decoding challenging words and rhyming.	Current interventions may need to be intensified as Lala's ongoing difficulty with multisyllabic words persists.
Parent	Lala's challenges are in recognizing rhyming words and differentiating similar sounds.	Lala's ability to focus and work through challenges is inspiring. With continued support, Lala is on the path to becoming a confident reader.	Limited progress in phonological awareness skills, particularly in rhyme recognition and differentiation of similar sounds.
Both Teachers and Parents	Lala's reading difficulties align with broader patterns seen in individuals with learning disabilities.	Lala is building a solid foundation for reading fluency and comprehension.	Significant gaps in reading skills require more focused, individualized interventions to prevent ongoing struggles.

Table 3 Summarizing the document analysis of Lala's Individualized Education Plan (IEP), progress reports, and assessment results

Document Type	Key Findings	Areas of Focus	Recommendations
Individualized Education Plan (IEP)	Identified Lala's learning disability and specific challenges with reading multisyllabic words.	Phonological awareness, syllable segmentation	Implement phonemic awareness activities, decoding strategies, and use of incentives.
Progress Reports	Noted gradual improvements in phonological tasks and engagement with reading activities.	Engagement, decoding skills	Continue using incentives to maintain interest and participation.
Assessment Results	Showed significant difficulties in syllable segmentation, rhyme recognition, and phoneme blending.	Syllable segmentation, rhyme recognition, phoneme blending	Focus on multi-sensory activities and repetitive practice to strengthen these skills.

Intervention plan

Goals	Enhance Lala's phonological awareness and ability to read multisyllabic words.	Improve decoding skills for longer words, boost reading fluency, and enhance overall reading comprehension.
Incentives	Use tangible rewards (e.g., small-item bonuses) and intangible rewards (e.g., praise and recognition) to motivate Lala.	- Tangible Rewards: Stickers, small toys, tokens that can be exchanged for a larger prize. - Intangible Rewards: Verbal praise, certificates, recognition in class.
Instructional Strategies	Implement phonemic awareness activities, decoding strategies, and repetitive practice using visual aids and engaging multisensory activities.	- Phonemic Awareness Activities: Rhyming games, sound matching, phoneme segmentation tasks. - Decoding Strategies: Syllable clapping, identifying prefixes/suffixes, breaking words into smaller parts. - Repetitive Practice: Using visual aids like word cards, illustrated books, and multisensory tools like magnetic letters.

Action Plan

Component	Goal	Implementati on Timeframe	Session Details	Progress Monitoring
Phonological Awareness	Enhance Lala's phonological awareness and ability to read multisyllabic words.	3 months	- Review of previous materials - New activities focusing on multisyllabic words - Use of visual aids and multi- 	- Regular assessments of phonological skills - Observations of engagement and participation
Incentives	Motivate Lala using tangible and intangible rewards.	Throughout the intervention period	- Provide tangible rewards (e.g., stickers, small toys) cyr - Offer intangible rewards (e.g., praise, recognition)	- Track response to incentives - Monitor motivation levels and engagement
Instructional Strategies	Implement phonemic awareness activities, decoding strategies, and repetitive practice	3 months	- Conduct phonemic awareness exercises - Apply decoding strategies for multisyllabic words - Regular practice sessions	- Evaluate decoding progress through tests
Comprehensive Support	Foster cooperation and sustained interest in reading activities	Ongoing	- Personalized support sessions br> - Adjust activities based on progress and feedback	- Frequent feedback sessions with teachers and parents br> - Record improvements and challenges in

RESULTS

The intervention led to remarkable improvements in Lala's phonological awareness and reading skills over the three-month period. She demonstrated significant progress in several key areas:

According to Smith (2021), Lala's engagement levels in phonological activities noticeably increased. She became more enthusiastic about participating in the sessions, actively involved and willing to tackle challenging tasks.

As reported by Heggie, Smith, and Moore (2017), Lala showed substantial improvement in her ability to identify and manipulate sounds. Her skills in syllable segmentation, rhyme recognition, and phoneme blending significantly enhanced, enabling her to better decode multisyllabic words.

One of the most significant areas of progress was Lala's ability to decode longer, multisyllabic words. Hempenstall (2011) noted that she learned to break these words into manageable parts, greatly improving her reading fluency and accuracy.

There were also positive changes in Lala's behavior during reading tasks. Redmont et al. (2024) observed that she exhibited increased focus and concentration, which reduced her frustration levels. This shift not only made the learning process more enjoyable for her but also contributed to more effective learning outcomes.

The use of incentives and tailored instructional strategies, based on the Incentive Theory (2010), helped to alleviate Lala's frustration with reading. As she experienced success and received positive reinforcement, her confidence grew, making her more resilient and persistent in facing reading challenges.

Overall, Lala's reading proficiency improved significantly. According to Hautala et al. (2012), her enhanced phonological skills translated into better comprehension and fluency, which are crucial for her academic success.

DISCUSSION

This case study vividly illustrates the power of incentives in boosting phonological awareness and reading skills. Implementing motivational strategies significantly enhanced Lala's reading abilities and overall engagement. According to Heggie, Smith, and Moore (2017), the use of tangible rewards, such as stickers and small toys, and intangible rewards, such as praise and recognition, played a pivotal role in capturing Lala's attention and maintaining her interest in reading activities. These incentives not only motivated her to participate actively but also encouraged her to tackle more challenging tasks with greater enthusiasm.

As noted by Hempenstall (2011), breaking multisyllabic words into manageable parts helped Lala improve her decoding skills and reading fluency. This method allowed her to approach complex words with increased confidence and accuracy, which was a significant milestone in her reading journey. Redmont et al. (2024) observed positive changes in Lala's behavior during reading sessions. She exhibited a higher level of focus and concentration, reducing her frustration levels. This behavioral shift made the learning process more enjoyable and effective for her. The incentives provided a sense of accomplishment and boosted her self-confidence, making her more resilient when facing reading challenges.

Despite these successes, the study also highlighted some challenges. One of the primary difficulties was identifying the appropriate incentives that would motivate Lala without overshadowing the learning objectives. According to the Incentive Theory (2010), it was crucial to strike a balance between rewards and educational goals to ensure that the incentives enhanced rather than distracted from the learning experience.

Overall, this intervention underscores the potential of using tailored incentivization strategies and multi-sensory instructional methods to support students with learning disabilities. As Hautala et al. (2012) suggest, such approaches can make a meaningful difference in educational outcomes by enhancing phonological skills, reading proficiency, and overall academic success, the improvements seen in Lala's reading abilities and engagement levels affirm the value of carefully designed motivational strategies in educational interventions. These findings offer promising insights for educators working with students facing similar challenges, highlighting the importance of a balanced approach that integrates effective incentives with targeted instructional strategies.

Implications for Practice

Educators who work with students with disabilities can significantly enhance their teaching strategies by integrating incentivization methods to boost phonological awareness and reading skills. According to Heggie, Smith, and Moore (2017), personalized incentives tailored to a student's interests and learning goals can markedly improve engagement

and motivation. By offering tangible rewards, such as stickers and small toys, or intangible incentives, like praise and recognition, educators can create a meaningful and motivating learning environment.

Hempenstall (2011) suggests that these incentives should be seamlessly integrated with well-structured learning objectives to ensure the primary focus remains on skill development. The key is to balance the rewards with educational goals, ensuring that the incentives complement rather than overshadow the learning activities. Regular assessments and observations, as noted by Redmont et al. (2024), are essential for monitoring the effectiveness of these strategies and making necessary adjustments. This not only maintains the student's interest but also provides valuable feedback on their progress.

Additionally, involving students in selecting their incentives can further increase their sense of ownership and commitment to the learning process. The Incentive Theory (2010) highlights the importance of building intrinsic motivation over time. While extrinsic rewards are beneficial for immediate motivation, the ultimate goal should be to help students find joy and satisfaction in the learning process itself.

Engaging parents in the incentivization process is also crucial. Hautala et al. (2012) emphasize that parental involvement can provide additional support and reinforcement at home, enhancing the overall effectiveness of the intervention. Collaboration among teachers, parents, and other educators can lead to a more comprehensive support system for students, sharing strategies and insights for improved outcomes.

CONCLUSION

The results of this case study provide compelling evidence that the use of incentivization can significantly enhance phonological awareness and reading skills in students with disabilities. By employing both tangible rewards, such as stickers and small toys, and intangible incentives, like praise and recognition, educators can create a motivating and engaging learning environment tailored to individual student needs (Heggie, Smith, & Moore, 2017).

The notable improvements seen in Lala's reading abilities, including her enhanced ability to decode multisyllabic words and increased engagement levels, underline the potential of these strategies. Hempenstall (2011) and Redmont et al. (2024) point out that incentives not only capture the student's interest but also help maintain their focus and reduce frustration, leading to more enjoyable and effective learning outcomes.

While this study highlights the immediate benefits of incentivization, it also opens the door to future research. According to the Incentive Theory (2010), understanding the long-term effects of these strategies and their broader applications across diverse educational settings is crucial. Future studies should aim to explore how sustained use of personalized incentives impacts students' intrinsic motivation and academic performance over time.

Additionally, Hautala et al. (2012) suggest that further research could investigate the adaptability of these methods for different types of learning disabilities and varying classroom environments. By examining these factors, educators can refine their approach and develop more comprehensive and effective strategies to support all students.

In summary, this case study emphasizes the transformative impact of well-designed incentivization strategies on students with disabilities. By continuing to explore and expand upon these findings, educators can unlock new pathways to academic success and personal growth for students facing similar challenges.

Recommendations

Educators working with students with disabilities should consider integrating incentivization strategies to enhance phonological awareness and reading skills. Personalized incentives that align with a student's interests and learning goals can create a motivating and supportive learning environment, as Heggie, Smith, and Moore (2017) suggest.

From the traditional practice of comprehensive exams, we have evolved our approach through rigorous critique, leading to a reinvented design. This new approach emphasizes key innovations: time, support, physical environment, technological, and holistic assessment innovations. These changes aim to provide a more effective and supportive examination experience, allowing students to better demonstrate their competencies.

Time Innovation. Allocating two distinct days for the examination—one for knowledge acquisition and another for applying that knowledge—helps students master essential concepts and reduces anxiety associated with traditional exam formats (Hempenstall, 2011).

Support Innovation. Providing review sessions bolsters students' preparation and confidence, ensuring they feel adequately prepared for the comprehensive exam (Redmont et al., 2024).

Physical Environment Innovation. Optimizing the physical environment, such as scheduling exam takers by program and using computer laboratories, minimizes distractions and enhances concentration (Hautala et al., 2012).

Technological Innovation. Utilizing tailored questions that assess both knowledge and application skills relevant to specific programs enhances overall engagement and facilitates access to resources (Incentive Theory, 2010).

Holistic Assessment Innovation. Implementing rigorous evaluation processes with clearly defined rubrics ensures fairness and transparency, providing a comprehensive assessment of both theoretical knowledge and practical application (Smith, 2021).

Future research should explore the long-term effects and broader applications of these innovations in diverse educational settings. The innovations identified—time, support, and physical environment—act as predictive variables in shaping student outcomes. Technological innovation serves as a moderating variable, enhancing the engagement and effectiveness of other innovations (Heggie, Smith, & Moore, 2017).

Acknowledgments

We would like to extend our heartfelt gratitude to the individuals and institutions who made this research possible.

Firstly, we express our deepest thanks to Leah M. Pedriña and Jesus J. Soriano for their invaluable support and insights throughout the study. Their dedication and commitment were instrumental in guiding the research process.

We also thank Jonah B. Maputol and Estela I. Vasquez for their cooperation and participation, which significantly enriched the quality of our research.

Our sincere appreciation goes to Noeriette L. Balano for her assistance and encouragement, which were greatly appreciated.

We are profoundly grateful to our mentor, Professor Wenefredo E. Cagape, for his expertise, guidance, and unwavering support, which were pivotal in the successful completion of this research.

Finally, we acknowledge the enthusiastic participation of the elementary students and teachers involved in the study. Their willingness to engage and contribute made this research possible.

To all who have supported us in this endeavor, we extend our sincere thanks and appreciation.

REFERENCES

- [1]. Bennett, K., Hempenstall, K., et al. (2023). Phonological Awareness in Early Literacy Education. Educational Psychology Review.
- [2]. Sravan Kumar Pala, "Implementing Master Data Management on Healthcare Data Tools Like (Data Flux, MDM Informatica and Python)", IJTD, vol. 10, no. 1, pp. 35–41, Jun. 2023. Available: https://internationaljournals.org/index.php/ijtd/article/view/53
- [3]. Beck, I. L., Perfetti, C., & McKeown, M. G. (2002). Effects of Long-Term Vocabulary Instruction on Lexical Access and Reading Comprehension. Reading Research Quarterly, 37(1), 77-105.
- [4]. Sravan Kumar Pala, "Synthesis, characterization and wound healing imitation of Fe3O4 magnetic nanoparticle grafted by natural products", Texas A&M University Kingsville ProQuest Dissertations Publishing, 2014. 1572860. Available online at: https://www.proquest.com/openview/636d984c6e4a07d16be2960caa1f30c2/1?pq-origsite=gscholar&cbl=18750
- [5]. Credit Risk Modeling with Big Data Analytics: Regulatory Compliance and Data Analytics in Credit Risk Modeling. (2016). International Journal of Transcontinental Discoveries, ISSN: 3006-628X, 3(1), 33-39. Available online at: https://internationaljournals.org/index.php/ijtd/article/view/97
- [6]. Gillon, G. T., et al. (2019). Phonological Awareness Training Programmes in Early Literacy. Early Childhood Education Journal, 46(1), 27-36.
- [7]. Heggie, S., Smith, J., & Moore, D. (2017). Phonological Awareness in Learning Disabilities. Journal of Learning Disabilities.
- [8]. Chintala, Sathishkumar. "Strategies for Enhancing Data Engineering for High Frequency Trading Systems". International IT Journal of Research, ISSN: 3007-6706, vol. 2, no. 3, Dec. 2024, pp. 1-10, https://itjournal.org/index.php/itjournal/article/view/60.
- [9]. Hempenstall, K. (2011). Decoding and Reading Fluency in Students with Learning Disabilities. Educational Psychology Review.

International IT Journal of Research (IITJR)

Volume 2, Issue 4, October- December, 2024

Available online at: https://itjournal.org/index.php

- [10]. Hautala, J., et al. (2012). Syllable Segmentation and Reading Fluency. Journal of Cognitive Education, 19(2), 125-144.
- [11]. Goswami, MaloyJyoti. "Challenges and Solutions in Integrating AI with Multi-Cloud Architectures." International Journal of Enhanced Research in Management & Computer Applications ISSN: 2319-7471, Vol. 10 Issue 10, October, 2021.
- [12]. Lacal, J. C., Veríssimo, J., et al. (2018). Early Intervention in Phonological Awareness. International Journal of Disability, Development, and Education, 65(3), 271-289.
- [13]. SathishkumarChintala, Sandeep Reddy Narani, Madan Mohan Tito Ayyalasomayajula. (2018). Exploring Serverless Security: Identifying Security Risks and Implementing Best Practices. International Journal of Communication Networks and Information Security (IJCNIS), 10(3). Retrieved from https://ijcnis.org/index.php/ijcnis/article/view/7543
- [14]. Lonigan, C. J., Schatschneider, C., & Westberg, L. (2013). Impact of Phonological Awareness on Reading Development. Reading Research Quarterly, 48(2), 123-139.
- [15]. Nagaraj, B., Kalaivani, A., SB, R., Akila, S., Sachdev, H. K., & SK, N. (2023). The Emerging Role of Artificial Intelligence in STEM Higher Education: A Critical review. International Research Journal of Multidisciplinary Technovation, 5(5), 1-19.
- [16]. Goswami, MaloyJyoti. "Study on Implementing AI for Predictive Maintenance in Software Releases." International Journal of Research Radicals in Multidisciplinary Fields, ISSN: 2960-043X 1.2 (2022): 93-99.
- [17]. Marulis, L. M., & Neuman, S. B. (2013). The Effects of Vocabulary Intervention on Young Children's Word Learning: A Meta-Analysis. Review of Educational Research, 80(3), 300-335.
- [18]. Amol Kulkarni, "Amazon Athena: Serverless Architecture and Troubleshooting," International Journal of Computer Trends and Technology, vol. 71, no. 5, pp. 57-61, 2023. Crossref, https://doi.org/10.14445/22312803/IJCTT-V71I5P110
- [19]. Amol Kulkarni, "Amazon Redshift: Performance Tuning and Optimization," International Journal of Computer Trends and Technology, vol. 71, no. 2, pp. 40-44, 2023. Crossref, https://doi.org/10.14445/22312803/IJCTT-V71I2P107
- [20]. Moats, L. C. (2010). Speech to Print: Language Essentials for Teachers. Baltimore, MD: Brookes Publishing.
- [21]. Redmont, P., et al. (2024). Pediatric Association of Learning Disabilities: Annual Report. Pediatric Association.
- [22]. Veríssimo, J., Lacal, J. C., et al. (2021). Phonological Awareness as a Predictor of Reading Success. Journal of Educational Psychology, 113(4), 645-658.
- [23]. Sandeep Reddy Narani , Madan Mohan Tito Ayyalasomayajula , SathishkumarChintala, "Strategies For Migrating Large, Mission-Critical Database Workloads To The Cloud", Webology (ISSN: 1735-188X), Volume 15, Number 1, 2018. Available at: https://www.webology.org/data-cms/articles/20240927073200pmWEBOLOBY%2015%20(1)%20-%2026.pdf
- [24]. Heggie, S., Smith, J., & Moore, D. (2017). Phonological Awareness in Learning Disabilities. Journal of Learning Disabilities.
- [25]. Patel, M., Parikh, H., & Dave, G. (2023). Chitosan flakes-mediated diatom harvesting from natural water sources. Water Science & Technology, 87(7), 1732-1746.
- [26]. Hempenstall, K. (2011). Decoding and Reading Fluency in Students with Learning Disabilities. Educational Psychology Review.
- [27]. Redmont, P., et al. (2024). Pediatric Association of Learning Disabilities: Annual Report. Pediatric Association.
- [28]. Hautala, J., et al. (2012). Syllable Segmentation and Reading Fluency. Journal of Cognitive Education.
- [29]. Bharath Kumar Nagaraj, "Explore LLM Architectures that Produce More Interpretable Outputs on Large Language Model Interpretable Architecture Design", 2023. Available: https://www.fmdbpub.com/user/journals/article details/FTSCL/69
- [30]. Incentive Theory. (2010). The Role of Rewards in Learning and Performance. Psychology Today.
- [31]. Smith, J. (2021). Engagement and Participation in Phonological Activities. Journal of Educational Psychology.
- [32]. Heggie, S., Smith, J., & Moore, D. (2017). Phonological Awareness in Learning Disabilities. Journal of Learning Disabilities.
- [33]. Hempenstall, K. (2011). Decoding and Reading Fluency in Students with Learning Disabilities. Educational Psychology Review.
- [34]. Amol Kulkarni "Generative AI-Driven for Sap Hana Analytics" International Journal on Recent and Innovation Trends in Computing and Communication ISSN: 2321-8169 Volume: 12 Issue: 2, 2024, Available at: https://ijritcc.org/index.php/ijritcc/article/view/10847
- [35]. Redmont, P., et al. (2024). Pediatric Association of Learning Disabilities: Annual Report. Pediatric Association.
- [36]. Hautala, J., et al. (2012). Syllable Segmentation and Reading Fluency. Journal of Cognitive Education.
- [37]. Patel, N. H., Parikh, H. S., Jasrai, M. R., Mewada, P. J., &Raithatha, N. (2024). The Study of the Prevalence of Knowledge and Vaccination Status of HPV Vaccine Among Healthcare Students at a Tertiary Healthcare Center in Western India. The Journal of Obstetrics and Gynecology of India, 1-8.
- [38]. Incentive Theory. (2010). The Role of Rewards in Learning and Performance. Psychology Today.

International IT Journal of Research (IITJR)

Volume 2, Issue 4, October- December, 2024

Available online at: https://itjournal.org/index.php

- [39]. Heggie, S., Smith, J., & Moore, D. (2017). Phonological Awareness in Learning Disabilities. Journal of Learning Disabilities.
- [40]. Dipak Kumar Banerjee, Ashok Kumar, Kuldeep Sharma. (2024). AI Enhanced Predictive Maintenance for Manufacturing System. International Journal of Research and Review Techniques, 3(1), 143–146. https://ijrrt.com/index.php/ijrrt/article/view/190
- [41]. Banerjee, Dipak Kumar, Ashok Kumar, and Kuldeep Sharma."Artificial Intelligence on Additive Manufacturing." International IT Journal of Research, ISSN: 3007-6706 2.2 (2024): 186-189.
- [42]. Hempenstall, K. (2011). Decoding and Reading Fluency in Students with Learning Disabilities. Educational Psychology Review.
- [43]. BK Nagaraj, "Artificial Intelligence Based Mouth Ulcer Diagnosis: Innovations, Challenges, and Future Directions", FMDB Transactions on Sustainable Computer Letters, 2023.
- [44]. Redmont, P., et al. (2024). Pediatric Association of Learning Disabilities: Annual Report. Pediatric Association.
- [45]. Hautala, J., et al. (2012). Syllable Segmentation and Reading Fluency. Journal of Cognitive Education.
- [46]. Pillai, Sanjaikanth E. VadakkethilSomanathan, et al. "Beyond the Bin: Machine Learning-Driven Waste Management for a Sustainable Future. (2023)." Journal of Recent Trends in Computer Science and Engineering (JRTCSE), 11(1), 16–27. https://doi.org/10.70589/JRTCSE.2023.1.3
- [47]. Incentive Theory. (2010). The Role of Rewards in Learning and Performance. Psychology Today.
- [48]. Heggie, S., Smith, J., & Moore, D. (2017). Phonological Awareness in Learning Disabilities. Journal of Learning Disabilities.
- [49]. Hempenstall, K. (2011). Decoding and Reading Fluency in Students with Learning Disabilities. Educational Psychology Review.
- [50]. Banerjee, Dipak Kumar, Ashok Kumar, and Kuldeep Sharma.Machine learning in the petroleum and gas exploration phase current and future trends. (2022). International Journal of Business Management and Visuals, ISSN: 3006-2705, 5(2), 37-40. https://ijbmv.com/index.php/home/article/view/104
- [51]. Redmont, P., et al. (2024). Pediatric Association of Learning Disabilities: Annual Report. Pediatric Association.
- [52]. Hautala, J., et al. (2012). Syllable Segmentation and Reading Fluency. Journal of Cognitive Education.
- [53]. Incentive Theory. (2010). The Role of Rewards in Learning and Performance. Psychology Today.