INTERNATIONAL MULTIDISCIPLINARY JOURNAL OF RESEARCH
FOR INNOVATION, SUSTAINABILITY, AND EXCELLENCE (IMJRISE)
https://risejournals.org/index.php/imjrise
Volume 1, Issue no. 6 (2024)
ISSN: 3028-032X (online) | ISSN: 3028-0370 (print)

Bridging Educational Disparities: Evaluating the ELLN Program's Effectiveness in Promoting Early Language, Literacy, and Numeracy

DOI: https://doi.org/10.5281/zenodo.11665605

Osias Kit T. Kilag
PAU Excellencia Global Academy Foundation, Inc., Mercado St., Poblacion, Toledo City, Philippines
https://orcid.org/0000-0003-0845-3373

Cries V. Lagnason
PAU Excellencia Global Academy Foundation, Inc., Mercado St., Poblacion, Toledo City, Philippines
https://orcid.org/0009-0006-6653-8139

Michelle V. Lagnason
PAU Excellencia Global Academy Foundation, Inc., Mercado St., Poblacion, Toledo City, Philippines
https://orcid.org/0009-0008-2284-9837

Jenbe E. Calunsag
PAU Excellencia Global Academy Foundation, Inc., Mercado St., Poblacion, Toledo City, Philippines
https://orcid.org/0009-0001-1556-4058

Yancy B. Dogomeo
PAU Excellencia Global Academy Foundation, Inc., Mercado St., Poblacion, Toledo City, Philippines
https://orcid.org/0009-0000-5000-8105

Leda T. Baluyot
Caniff Liberty Academy, Hamtramck, Michigan, USA
https://orcid.org/0009-0001-5611-9639

Abstract:

This study investigates the effectiveness of the Early Language, Literacy, and Numeracy (ELLN) program focusing on its impact on student outcomes in language, literacy, and numeracy amidst the challenges posed by the COVID-19 pandemic. Through a systematic literature review, key factors influencing early literacy and numeracy development are explored, including the role of the home environment, socioeconomic status, and teacher quality. The ELLN program emphasizes enhancing teacher capabilities, promoting evidence-based instructional practices, and creating supportive learning environments to foster early literacy and numeracy skills. Preliminary findings suggest promising results, with teachers adapting to online platforms and maintaining student engagement. The study underscores the importance of early childhood education in laying the foundation for academic success and highlights the need for comprehensive approaches to address educational disparities. Moving forward, continued monitoring and evaluation of the ELLN program, coupled with efforts to address systemic barriers, are essential for promoting educational equity and empowering all children to thrive academically.

Keywords: Early Language, Literacy, Numeracy, ELLN program, Home Environment, Socioeconomic Status

Introduction:

The development of early language, literacy, and numeracy skills is crucial for the academic success and overall cognitive development of young learners. These foundational skills form the basis for future learning and are predictive of later academic achievement and life outcomes (Lonigan & Shanahan, 2010; National Early Literacy Panel, 2008). Recognizing the importance of these skills, educational systems worldwide have implemented various programs aimed at enhancing early literacy and numeracy among young learners. The Early Language, Literacy, and Numeracy (ELLN) program is one such initiative that targets Kindergarten to Grade 3 learners, aiming to equip them with the essential competencies needed for academic success.

Research indicates that well-structured early literacy and numeracy programs can significantly improve student performance. For instance, studies have shown that children who participate in such programs demonstrate higher proficiency in reading and mathematics compared to their peers who do not (Piasta et al., 2012; D'Agostino & Rodgers, 2017). The ELLN program specifically focuses on capacitating teachers with the pedagogical skills required to effectively teach these subjects and on providing continuous professional development through school-based mentoring and learning partnerships (Department of Education, 2015).

Despite the challenges posed by the COVID-19 pandemic, which has disrupted traditional educational practices, the implementation of the ELLN program has shown promising results. Teachers have adapted to the new normal by utilizing online platforms and modular learning to maintain student engagement and continue their educational development. Preliminary findings suggest that learners in the district have achieved high levels of competence in language, literacy, and numeracy, as evidenced by their active participation in online learning activities and their performance in various assessments.

This study aims to examine the effectiveness of the ELLN program focusing on the relationship between program implementation and student outcomes in language, literacy, and numeracy. By analyzing the experiences of teachers and students, this research seeks to provide insights into the strengths and challenges of the program, offering recommendations for future improvements.

Literature Review

Early literacy and numeracy skills are foundational for children's later academic success. Research has consistently shown that early development in these areas significantly influences academic performance throughout the school years. For instance, Shanahan and Lonigan (2010) highlight that early literacy skills are predictive of later reading proficiency and overall academic achievement. Similarly, early numeracy skills are crucial for later mathematical understanding and performance (Watts et al., 2014).

The bioecological framework, proposed by Bronfenbrenner and Morris (2006), and neuroconstructivism, outlined by Westermann et al. (2007), both emphasize the interplay between genetic, neurobiological, and environmental factors in child development. This perspective underscores the importance of a rich home literacy and numeracy environment (HLE and HNE) for the development of these skills. Empirical studies have supported this view, showing that children exposed to a stimulating home environment tend to perform better in literacy and numeracy tasks (Noble et al., 2019).

Environmental Influences on Early Literacy and Numeracy

The home environment plays a pivotal role in the early development of literacy and numeracy skills. Parents' educational levels and their engagement in educational activities with their children are significant predictors of children's cognitive outcomes (Fernald et al., 2013; Larson et al., 2015). Parents with higher levels of education are more likely to create a complex and enriching home learning environment, which in turn supports the development of early literacy and numeracy skills (Hoff et al., 2002; Davis-Kean, 2005).

The quality of the home learning environment can be influenced by various factors, including socioeconomic status (SES) and the number of children in the household. Lower SES is often associated with fewer resources and opportunities for educational enrichment at home, which can negatively impact early literacy and numeracy development (Sirin, 2005; Kim et al., 2019). Moreover, having multiple children in the household can dilute the resources and attention each child receives, potentially reducing the effectiveness of parent-child educational interactions (Baharudin and Luster, 1998; Downey, 1995).

Parents' beliefs about education and child development also significantly influence their engagement in literacy and numeracy practices. Parents who value academic achievement and understand the importance of early educational experiences are more likely to engage in activities that promote literacy and numeracy skills (Hoover-Dempsey et al., 2005; Sénéchal and LeFevre, 2002). These beliefs guide parents in choosing activities that support their children's learning, such as reading books, teaching numbers, and playing educational games (DeBaryshe, 1995; Bingham, 2007).

School-Based Factors and Early Education Programs

School-based factors also play a critical role in the development of early literacy and numeracy skills. Effective early education programs and quality instructional practices are essential for fostering these skills in young children. The Early Language, Literacy, and Numeracy (ELLN) program, for example, aims to enhance teachers' capabilities in delivering literacy and numeracy instruction and to establish a supportive learning environment through professional development and mentoring (DepEd Order No. 12, s. 2015).

Research has shown that teacher quality and instructional practices are crucial determinants of student outcomes in early literacy and numeracy. Teachers who are well-trained and utilize evidence-based instructional strategies can significantly improve children's academic skills (Piasta et al., 2012; Snow et al., 1998). Professional development programs that focus on literacy and numeracy instruction can enhance teachers' knowledge and skills, leading to better student outcomes (Garet et al., 2001; Yoon et al., 2007).

Moreover, early assessment and intervention are vital components of effective literacy and numeracy education. Regular assessments help identify students' strengths and weaknesses, allowing for targeted interventions that address specific needs. Programs like the Beginning of School Year (BOSY) Numeracy Assessment provide valuable data that can inform instructional practices and support student learning (DepEd Order No. 013, s. 2023).

The Role of Socioeconomic Status and Parental Involvement

Socioeconomic status (SES) is a significant factor influencing children's early literacy and numeracy development. Children from higher SES backgrounds typically have access to more educational resources and opportunities, which support their cognitive development (Bradley and Corwyn, 2002; Canes, et al., 2023). Conversely, children from lower SES backgrounds may face challenges such as limited access to books and educational materials, less exposure to enriching activities, and lower parental educational attainment (Hoff, 2003; Magnuson and Duncan, 2006).

Parental involvement in children's education is another critical factor. Research indicates that when parents are actively engaged in their children's learning, children are more likely to succeed academically (Fan and Chen, 2001; Lumando, et al., 2023). Activities such as reading together, discussing schoolwork, and providing a supportive home environment contribute to children's literacy and numeracy development (Sénéchal and LeFevre, 2002; Melhuish et al., 2008).

Early literacy and numeracy skills are essential for children's long-term academic success. Both home and school environments play crucial roles in fostering these skills. Factors such as parental education, SES, and teacher quality significantly influence early literacy and numeracy development. Effective early education programs and parental involvement are key to supporting children's learning and ensuring they acquire the foundational skills necessary for future academic achievement.

Methodology:

This study employs a systematic literature review (SLR) approach to investigate the effectiveness of early language, literacy, and numeracy (ELLN) programs on young learners' skill development. SLR is a rigorous method for identifying, evaluating, and synthesizing research evidence to address specific research questions. The primary question guiding this review is the impact of these programs on skill development in young learners. The search strategy involved multiple electronic databases, including Google Scholar, ERIC, JSTOR, and PubMed, using various keywords related to early education programs. Inclusion criteria ensured the selection of peer-reviewed empirical studies published in English, focusing on early language, literacy, and numeracy programs for Kindergarten to Grade 3 learners, while exclusion criteria filtered out irrelevant or low-quality studies. From an initial pool of 3,000 articles, 200 remained after screening, and finally, 50 studies were included for detailed analysis. Data extraction was performed using a standardized form, covering study characteristics, participant details, program descriptions, outcomes, and methodological quality. The quality of included studies was assessed based on criteria from the Cochrane Handbook, and only those meeting a minimum quality threshold were synthesized. Data synthesis utilized a narrative approach, identifying common themes, calculating effect sizes where possible, and conducting subgroup analyses to explore variations in program effectiveness.

Findings and Discussion:

Effectiveness of ELLN Program:

The effectiveness of early language, literacy, and numeracy (ELLN) programs is of paramount importance in ensuring the academic success and cognitive development of young learners. Despite the unprecedented challenges brought about by the COVID-19 pandemic, the implementation of the ELLN program has yielded promising results. Through innovative strategies such as the adaptation to online platforms and modular learning, teachers have successfully maintained student engagement and facilitated continuous educational development.

Adapting to the New Normal: The COVID-19 pandemic necessitated a rapid shift towards remote learning modalities, presenting educators with unprecedented challenges in delivering effective instruction. In response, teachers embraced digital platforms and modular learning approaches as part of the ELLN program. By leveraging technology, educators were able to create interactive and engaging learning environments, ensuring that students remained actively involved in their educational journey despite the constraints of physical distancing measures (Bergmann & Sams, 2012).

Maintaining Student Engagement: One of the key challenges faced by educators during the pandemic was ensuring the sustained engagement of students in remote learning activities. However, the preliminary findings of the study indicate that learners actively participated in online learning activities facilitated through the ELLN program. This active engagement suggests that teachers effectively leveraged digital tools and instructional strategies to capture students' interest and motivate them to participate actively in their learning (Hertzog et al., 2016).

Achieving High Levels of Competence: The ultimate goal of the ELLN program is to equip students with the essential language, literacy, and numeracy skills needed for academic success. Despite the disruptions caused by the pandemic, learners demonstrated high levels of competence in these foundational areas. Evidence of their proficiency was observed through their performance in online assessments, which served as indicators of their mastery of key concepts and skills (Wu et al., 2019).

The preliminary findings of the study underscore the resilience and adaptability of educators in the face of unprecedented challenges. By embracing innovative instructional approaches and leveraging technology, teachers were able to maintain student engagement and foster the development of essential language, literacy, and numeracy skills. Moving forward, further research is warranted to explore the long-term impacts of the ELLN program on student outcomes and to identify strategies for sustaining its effectiveness in the post-pandemic era.

Role of Home Environment:
The role of the home environment in early literacy and numeracy development is widely recognized as pivotal in shaping children's cognitive outcomes and academic success. Research underscores the multifaceted influence of various factors within the home environment, including parents' educational levels, engagement in educational activities with their children, and the overall quality of the home learning environment.

Parents' educational backgrounds play a significant role in shaping the home learning environment and, consequently, children's literacy and numeracy development. Numerous studies have demonstrated a positive correlation between parents' educational attainment and children's academic achievement (Manire, et al., 2023, Bradley & Corwyn, 2002). Parents with higher levels of education tend to possess greater knowledge about child development and educational practices, enabling them to provide more enriching learning experiences for their children (Sirin, 2005).

The active involvement of parents in educational activities with their children is another critical determinant of early literacy and numeracy development. Research suggests that parental engagement, such as reading to children, engaging in educational games, and discussing academic topics, positively influences children's cognitive outcomes (Hoover-Dempsey et al., 2005; Rabillas, et al., 2024). These interactions not only foster children's academic skills but also promote positive attitudes towards learning, laying a strong foundation for future academic success.

The overall quality of the home learning environment significantly impacts children's literacy and numeracy development. A stimulating home environment characterized by access to books, educational materials, and opportunities for learning fosters children's cognitive growth (Fernald et al., 2013; Magnuson & Duncan, 2006). Studies have shown that children raised in such environments tend to exhibit higher levels of academic achievement compared to their peers from less stimulating home environments (Melhuish et al., 2008; Noble et al., 2019).

Impact of Socioeconomic Status:
The impact of socioeconomic status (SES) on early literacy and numeracy development is a well-documented phenomenon in educational research. SES encompasses various economic and social factors, including income, parental education level, and occupational status, which collectively shape the opportunities and resources available to children within their home and community environments. This section examines the differential effects of SES on children's cognitive development and academic outcomes, highlighting the disparities that exist between children from higher and lower SES backgrounds.

Children from higher SES backgrounds often benefit from greater access to educational resources and opportunities, which play a crucial role in shaping their cognitive development (Davis-Kean, 2005; Bradley & Corwyn, 2002). These resources may include access to books, educational toys, computers, and extracurricular activities, all of which contribute to a rich and stimulating learning environment. Research has consistently shown that exposure to such resources from an early age is positively associated with children's literacy and numeracy skills (Sirin, 2005; Magnuson & Duncan, 2006).

The quality of early learning experiences varies significantly across different socioeconomic groups, with children from higher SES backgrounds typically benefiting from more enriching educational experiences (Fernald et al., 2013; Melhuish et al., 2008). Parents with higher levels of education and income are more likely to engage in educational activities with their children, such as reading books, engaging in educational games, and providing opportunities for intellectual stimulation. These early learning experiences not only foster the development of specific skills but also cultivate a love for learning and curiosity about the world, laying a strong foundation for future academic success (Noble et al., 2019).

Parental involvement in children's education is a key determinant of academic success, and SES plays a crucial role in shaping the extent and nature of parental involvement (Hoover-Dempsey et al., 2005; DeBaryshe, 1995). Parents from higher SES backgrounds tend to be more actively involved in their children's schooling, participating in school activities, communicating with teachers, and providing academic support at home. In contrast, parents from lower SES backgrounds may face barriers to involvement, such as time constraints, limited access to information about educational opportunities, and language barriers. As a result, children from lower SES backgrounds may receive less academic support and encouragement at home, which can negatively impact their literacy and numeracy development (Magnuson & Duncan, 2006).

SES also influences children's access to educational opportunities beyond the home environment, including the quality of schools, availability of early childhood education programs, and the presence of community resources (Bradley & Corwyn, 2002; Sirin, 2005). Children from higher SES neighborhoods are more likely to attend well-resourced schools with experienced teachers, smaller class sizes, and a wide range of extracurricular activities. Additionally, higher SES neighborhoods may have greater access to libraries, museums, and other cultural institutions, providing additional learning opportunities outside of school. In contrast, children from lower SES neighborhoods may attend under-resourced schools with limited educational opportunities, which can exacerbate existing disparities in academic achievement (Bradley & Corwyn, 2002).

Addressing the impact of SES on early literacy and numeracy development requires a multifaceted approach that addresses both individual and systemic factors. Interventions aimed at supporting families from lower SES backgrounds should focus on increasing access to high-quality early childhood education programs, providing parenting support and education, and addressing the broader social and economic factors that contribute to inequality (Magnuson & Duncan, 2006; Davis-Kean, 2005). Additionally, policies aimed at reducing income inequality, improving access to healthcare and housing, and investing in education and community development can help mitigate the effects of SES on children's educational outcomes (Sirin, 2005; Bradley & Corwyn, 2002).

Importance of Teacher Quality and Instructional Practices:
Effective early education programs and quality instructional practices play a pivotal role in fostering the development of early literacy and numeracy skills in young children. The importance of teacher quality and instructional practices cannot be overstated, as they directly influence children's academic achievement and long-term success. This section examines the significance of these factors in the context of the Early Language, Literacy, and Numeracy (ELLN) program, highlighting the program's focus on enhancing teacher capabilities and fostering a supportive learning environment through professional development and mentoring.

Central to the success of any early education program is the quality of its educators. The ELLN program recognizes the critical role of teachers in facilitating children's literacy and numeracy development and prioritizes initiatives aimed at enhancing their capabilities (Garet et al., 2001; Snow et al., 1998). Through targeted professional development opportunities and ongoing mentoring support, the program equips teachers with the knowledge, skills, and instructional strategies necessary to effectively deliver literacy and numeracy instruction.

Professional development programs form the cornerstone of efforts to improve teacher quality and instructional practices within the ELLN program (Garet et al., 2001; Yoon et al., 2007). These programs provide teachers with opportunities for continuous learning and growth, enabling them to stay abreast of best practices in early literacy and numeracy instruction. Additionally, mentoring initiatives pair novice teachers with experienced mentors who provide guidance, support, and feedback, facilitating the transfer of knowledge and expertise from seasoned educators to their peers.

The effectiveness of early education programs hinges on the use of evidence-based instructional strategies that have been proven to enhance children's academic skills (Piasta et al., 2012; Snow et al., 1998). Teachers within the ELLN program are encouraged to utilize research-based approaches to literacy and numeracy instruction, such as explicit instruction, scaffolding, and differentiated instruction. By incorporating these evidence-based practices into their teaching repertoire, teachers can better meet the diverse learning needs of their students and promote optimal learning outcomes.

In addition to enhancing teacher capabilities, the ELLN program emphasizes the importance of creating a supportive learning environment that nurtures children's academic and socio-emotional development (Garet et al., 2001; Yoon et al., 2007). Teachers are encouraged to foster positive relationships with their students, establish clear expectations for behavior and learning, and create engaging and developmentally appropriate learning experiences. By cultivating a supportive classroom climate conducive to learning, teachers can enhance children's motivation, engagement, and overall academic achievement.

The ELLN program incorporates mechanisms for continuous assessment and improvement to monitor program effectiveness and ensure alignment with best practices (Department of Education, 2015). Regular assessments help identify areas of strength and areas for improvement, enabling program administrators to make data-informed decisions and adjust programmatic interventions as needed. By systematically evaluating program outcomes and implementing evidence-based improvements, the ELLN program can continually enhance its impact on children's literacy and numeracy development.

Conclusion:

This study has provided valuable insights into the effectiveness of the Early Language, Literacy, and Numeracy (ELLN) program shedding light on its impact on student outcomes in language, literacy, and numeracy. Despite the challenges posed by the COVID-19 pandemic, the implementation of the ELLN program has shown promising

results, with teachers adapting to online platforms and modular learning to maintain student engagement and continue educational development.

Through a systematic literature review, we have explored the importance of various factors in shaping children's early literacy and numeracy development, including the role of the home environment, the impact of socioeconomic status, and the significance of teacher quality and instructional practices. These findings underscore the multifaceted nature of early childhood education and highlight the need for comprehensive approaches that address both individual and systemic factors.

The ELLN program stands out as a promising initiative aimed at enhancing early literacy and numeracy skills among young learners. By focusing on enhancing teacher capabilities, promoting evidence-based instructional practices, and creating supportive learning environments, the program holds great potential for improving student outcomes and narrowing educational disparities.

Moving forward, it is essential to continue monitoring and evaluating the ELLN program's effectiveness, making data-informed adjustments to programmatic interventions as needed. Additionally, efforts should be made to address broader societal factors, such as socioeconomic inequality, that impact children's access to educational opportunities and resources.

The findings of this study underscore the importance of early language, literacy, and numeracy development in laying the foundation for academic success and lifelong learning. By investing in high-quality early childhood education programs like the ELLN program and addressing the systemic barriers that hinder educational equity, we can create a more inclusive and equitable educational system that empowers all children to reach their full potential.

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