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Conceptualizing Bilingual Language Development on Learning: A Brief Introduction

Aminu Abdullahi Abbas[1] & Laraba Samuel Baba[2]
[1]Department of Psychology, Nigeria Police Academy, Wudil, Kano State.
[2]Department of Psychology, Nasarawa State University, Keffi

Corresponding Author's Email: abbasloko1@gmail.com

Abstract
Bilingualism has become increasingly prevalent in educational contexts due to globalization and migration, making it essential to understand how learners acquire, process, and utilize two languages. This paper explores key theoretical frameworks and recent empirical studies (2019-2024) on bilingual language development, with a focus on cognitive, academic, and sociocultural dimensions. It examines the Bilingual Advantage Hypothesis, Threshold Hypothesis, and the Dynamic Systems Approach to explain how bilingual learners develop proficiency in both languages. The paper also addresses the impact of factors such as age of acquisition, language exposure, motivation, and educational practices on bilingual development and academic outcomes. The findings suggest that bilingualism can confer cognitive advantages, particularly in executive functions, and that strong literacy skills in both languages enhance academic performance. However, these outcomes are highly dependent on the quality of language input and the learner's sociocultural environment. By synthesizing these insights, the paper aims to inform educational policies and practices to better support bilingual learners in diverse educational settings.

Keywords: Bilingual language development learning.

Introduction

Bilingualism has become increasingly common worldwide due to globalization and migration. As a result, understanding how bilingual language development occurs, particularly in educational settings, is crucial. This paper explores key theories and conceptual frameworks related to bilingual language development, addressing how individuals acquire, maintain, and utilize two languages within learning environments. Furthermore, it examines factors influencing bilingual language proficiency and cognitive outcomes, integrating recent research (2019-2024) to provide a contemporary understanding of bilingual language development.

There are so many factors that Influencing Bilingual Development on learning like, Age of Acquisition Age of acquisition remains one of the most critical factors influencing bilingual language development. According to a recent study by Kroll and Dussias (2019), individuals who acquire a second language (L2) early in life tend to achieve higher proficiency levels and greater cognitive benefits than those who acquire L2 later. However, while early bilinguals often have an advantage, research by Goriot et al. (2020) emphasizes that late bilinguals can still

achieve high levels of proficiency and reap cognitive benefits, especially with sufficient exposure and motivation. More so, Language Exposure and Input Quality could also be a factor. The quantity and quality of language exposure significantly impact bilingual development. Studies by Unsworth et al. (2021) have demonstrated that rich, meaningful exposure to both languages in various contexts is essential for developing proficiency. Moreover, exposure to high-quality input, such as interactions with native speakers or structured educational programs, can enhance both L1 and L2 development. Inadequate exposure or fragmented input may result in uneven language development or attrition (Flores & García, 2022). Lastly, Motivation and Identity serve as a factor as well. Motivation and identity are also critical in shaping bilingual language development. Research by Dörnyei and Ryan (2019) shows that learners with intrinsic motivation and positive attitudes toward their languages are more likely to achieve high proficiency levels. Similarly, heritage language speakers who view their language as integral to their identity are more likely to maintain proficiency over time (Polinsky, 2021). Consequently, fostering positive attitudes and a strong sense of cultural identity can support sustained bilingual development in educational contexts.

The growing prevalence of bilingualism in global and educational contexts has heightened the need to understand how children acquire, process, and utilize two languages. Despite the cognitive and academic benefits often associated with bilingualism, there remain significant gaps in understanding how various factors such as language exposure, sociocultural environment, and educational practices affect language development and academic performance. Many bilingual learners face challenges in literacy development, especially when learning in environments where their first language (L1) differs significantly from the language of instruction (L2). Moreover, the existing research does not fully address the influence of age of acquisition, input quality, and motivation on language proficiency across different educational settings.

This study aims to investigate these complexities in bilingual language development, focusing on how cognitive and sociocultural factors interact to influence learning outcomes. Specifically, the research seeks to understand the role of exposure to L1 and L2 in literacy and cognitive development and to examine how educational practices can better support bilingual learners. By addressing these gaps, this study will provide insights that can inform educational policies and practices for multilingual environments. This problem statement clearly outlines the issue, specifies why it is important, and sets the direction for the research. If you have a specific topic or study in mind, feel free to share it, and I can customize the problem statement accordingly.

The purpose of this paper is to briefly explore the conceptual frameworks and key factors influencing bilingual language development in educational settings. By examining recent research (2019-2024), the paper aims to provide a deeper understanding of how bilingual learners acquire and utilize two languages within diverse learning environments. It will investigate the cognitive, academic, and sociocultural dimensions of bilingualism, including how

factors such as age of acquisition, language exposure, and motivation affect language proficiency and academic performance. The goal is to synthesize current theoretical perspectives and empirical findings to offer insights that can guide educational practices and policies in supporting bilingual learners effectively.

Theories of Bilingual Language Development

The Bilingual Advantage Hypothesis One prominent theory is the Bilingual Advantage Hypothesis, which posits that bilingual individuals may have cognitive advantages over monolinguals, particularly in executive functions such as task-switching, inhibitory control, and working memory (Bialystok, 2019). The underlying assumption is that bilinguals' constant practice of managing two languages strengthens cognitive control. Studies conducted by DeLuca et al. (2020) and Antoniou (2020) support this hypothesis by demonstrating that bilingual individuals often outperform monolinguals in tasks requiring cognitive flexibility.

Benefits of bilingual advantage hypothesis

Many studies suggest that bilinguals have enhanced executive function, particularly in tasks that require cognitive flexibility, inhibition, and working memory. For instance, they are thought to be better at switching between tasks (cognitive flexibility) and ignoring irrelevant information (inhibitory control). Bilinguals constantly manage two language systems, which may strengthen their executive control. The regular practice of switching between languages and suppressing one while using another is believed to "exercise" the brain, contributing to greater mental flexibility.

Some research suggests that bilingual individuals show a delayed onset of Alzheimer's disease and other forms of dementia compared to monolinguals. For example, bilinguals tend to show symptoms of cognitive decline around 4-5 years later than their monolingual counterparts. The cognitive reserve built up through the constant juggling of two languages may delay neurodegenerative symptoms, acting as a form of mental buffer. Being bilingual may encourage a greater understanding of different cultures, enhance social adaptability, and foster better communication skills. In a world where cross-cultural communication is essential, this ability provides clear advantages. Bilinguals tend to have greater metalinguistic awareness, meaning they can think about and analyze language more effectively. This can improve learning in other domains like reading and grammar in both languages.

Some studies suggest that bilinguals perform better on problem-solving tasks due to their enhanced ability to process information from multiple sources and perspectives. Their capacity to think more abstractly and analytically is often highlighted in creative problem-solving tasks.

Gaps in the Bilingual Advantage Hypothesis

Not all studies confirm the bilingual advantage. Some research has found little to no difference between bilinguals and monolinguals in tasks involving executive control or cognitive flexibility.

Some studies have even found that bilinguals perform worse on certain tasks. It is context dependent. The advantage might be context-specific, only emerging in certain tasks or environments. The inconsistency in results raises questions about the universality of the bilingual advantage and whether it holds true across different populations, ages, or socioeconomic backgrounds. Some studies suffer from small, unrepresentative sample sizes, limiting the generalizability of their findings. This lack of robust statistical power undermines some of the more ambitious claims about bilingualism's cognitive benefits.

Studies that confirm the bilingual advantage hypothesis may be more likely to get published, contributing to a skewed perception of the evidence. Some researchers argue that positive findings tend to get more attention than studies that fail to replicate these results. The tasks used to measure executive function often differ widely between studies, making it hard to draw consistent conclusions. Additionally, these tasks may not always accurately capture the complexities of bilingual cognition, and some are designed in ways that unintentionally favor bilinguals. While bilingual advantages are sometimes observed in younger adults, the evidence for older adults and children is more mixed. Some researchers argue that the cognitive advantages might be short-lived or only appear in specific stages of life.

Bilingualism itself is not a homogeneous experience factors like the age of acquisition, proficiency in both languages, and how frequently the individual uses both languages can influence cognitive outcomes. These variables are often poorly accounted for in many studies. The bilingual advantage hypothesis may oversimplify the cognitive complexity of bilingualism, attributing too many cognitive benefits to simply being bilingual. The "advantage" may stem from other factors, such as education, intelligence, or cultural differences, which are not necessarily intrinsic to bilingualism itself. Some of the purported advantages could be more related to proficiency in managing multiple languages rather than an inherent cognitive edge. This distinction is often blurred in studies, leading to inflated claims about bilingual advantages. Socioeconomic status (SES) plays a critical role in cognitive development. Some studies suggest that the cognitive benefits seen in bilinguals might be more attributable to higher SES, educational opportunities, or other environmental factors rather than bilingualism itself. Studies that fail to control for SES may mistakenly attribute advantages to bilingualism that are actually due to privilege.

Summarily, while the Bilingual Advantage Hypothesis has garnered considerable attention and support, it is far from settled science. There are clear cognitive, social, and cultural benefits associated with bilingualism, but the evidence for a universal cognitive advantage is inconsistent and often dependent on external factors like methodology, language proficiency, and socioeconomic status. The hypothesis should be critically examined in future research to account for these gaps, and more nuanced studies are needed to explore the diversity of bilingual experiences across different populations and contexts.

Threshold Hypothesis

Cummins' (1976) Threshold *Hypothesis* remains highly relevant to bilingual development. This hypothesis suggests that for bilingual advantages to emerge, a learner must reach a certain threshold in both languages. Recent studies have continued to refine this theory. For example, Bohnacker (2021) revisits Cummins' model, arguing that balanced bilinguals those who have similar proficiency in both languages are more likely to experience cognitive benefits than individuals with dominant proficiency in one language. According to the hypothesis, bilingualism can result in cognitive advantages, but only when a threshold of language competence in both languages is crossed. Below this threshold, bilingualism may not yield benefits and may even have detrimental effects on cognitive development. This hypothesis is central to understanding how bilingualism affects cognitive, academic, and linguistic outcomes. Here is a critical analysis of its benefits and gaps.

Benefits of the Threshold Hypothesis

The Threshold Hypothesis acknowledges that the relationship between bilingualism and cognitive development is not straightforward. Unlike earlier assumptions that simply equated bilingualism with either cognitive benefits or deficits, the hypothesis emphasizes that bilingual proficiency plays a crucial role. By introducing thresholds, it avoids binary thinking, allowing for a more nuanced view of bilingualism. Bilinguals have varying degrees of proficiency in their two languages. The hypothesis captures this variability, accounting for how cognitive effects of bilingualism might depend on factors like fluency, exposure, and the balance between the two languages.

Cognitive benefits emerge after the threshold. The hypothesis suggests that once individuals achieve adequate proficiency in both languages, they are better positioned to experience cognitive benefits such as improved problem-solving, metalinguistic awareness, and greater cognitive flexibility. This is supported by research showing that bilingual individuals often perform better on tasks requiring cognitive control and switching between tasks. Achieving bilingual proficiency at higher levels is also linked to academic success, particularly in domains such as literacy and mathematics. Bilinguals with high proficiency in both languages tend to outperform monolingual peers in these areas, possibly because they develop more robust cognitive reserves.

The Threshold Hypothesis has significant implications for language instruction and education. It suggests that language programs should aim for high proficiency in both languages to maximize cognitive benefits. It also provides guidance for bilingual education policy, emphasizing the need for sufficient language support to help students reach higher proficiency levels. It encourages bilingualism at higher levels**.** The hypothesis advocates that bilingualism should be nurtured and developed rather than abandoned. It promotes the idea that individuals should strive to become truly proficient in both languages to avoid cognitive disadvantages. The hypothesis clarifies

contradictory findings which helps explain why some studies find cognitive benefits for bilinguals while others do not. When participants in studies lack sufficient proficiency in one or both languages, they may not exhibit the cognitive advantages typically associated with bilingualism. Thus, the hypothesis serves as a useful framework for interpreting inconsistent research outcomes in the field of bilingualism.

Gaps and Criticisms of the Threshold Hypothesis

One major criticism is that the hypothesis does not clearly define what constitutes a "threshold" level of proficiency. How fluent must someone be in each language to reach the cognitive benefits described by the hypothesis? This lack of specificity makes it difficult to test the hypothesis empirically and to apply it in practical settings. The challenge of quantifying proficiency further complicates the hypothesis. Is proficiency based solely on linguistic competence (e.g., vocabulary size, grammar accuracy), or does it include other factors like frequency of use, cultural integration, or contextual demands? Without clearer guidelines, it's hard to measure when a person has crossed the threshold. The hypothesis focuses heavily on linguistic proficiency but underestimates the importance of social, cultural, and emotional dimensions of bilingualism. For example, factors like identity, social integration, or emotional connection to a language might also affect cognitive and academic outcomes, but the hypothesis does not account for these influences.

Bilingualism often involves navigating two cultures or identities, which can affect an individual's cognitive development in ways not strictly related to language proficiency. For example, research suggests that bicultural individuals can show heightened social cognition and flexibility, but the Threshold Hypothesis focuses narrowly on linguistic skills. The Threshold Hypothesis focuses predominantly on cognitive and academic benefits but overlooks other important aspects of bilingualism. Bilinguals may experience benefits in areas like emotional intelligence, cultural empathy, and social adaptability, which may not be directly related to reaching a particular language proficiency threshold. The hypothesis misses these broader, non-cognitive advantages.

Bilingualism also provides emotional and personal benefits, such as maintaining family connections or cultural heritage. These benefits might not depend on meeting cognitive thresholds but are nonetheless crucial for individuals' well-being. The hypothesis may understate these dimensions by focusing too narrowly on cognitive benchmarks. According to the hypothesis, individuals below the threshold may suffer cognitive disadvantages. However, evidence of this is mixed. While some studies find lower academic performance in bilinguals with low proficiency, others suggest that early exposure to multiple languages even with limited proficiency can still yield metalinguistic and cognitive benefits.

Some researchers argue that the cognitive challenges of managing two languages (even with low proficiency) can still foster some level of cognitive flexibility, especially in children, even if they do not fully meet the threshold criteria. The hypothesis might oversimplify the relationship between language proficiency and cognitive outcomes by assuming clear-cut disadvantages below the threshold. The Threshold Hypothesis implies that there are stable points of proficiency that individuals must reach to reap cognitive benefits, but bilingualism is often a dynamic, fluid process. People's language skills fluctuate based on context, environment, and developmental stages. The hypothesis does not account for this fluidity, potentially oversimplifying how bilingualism interacts with cognition over time. The hypothesis assumes that balanced bilingualism where both languages are equally proficient is ideal for cognitive advantages. However, in real life, many bilinguals are dominant in one language, and this does not necessarily mean they lack cognitive benefits. The notion of balanced bilingualism may be outdated or not universally applicable.

Finally, Threshold Hypothesis offers a valuable framework for understanding the cognitive and academic benefits of bilingualism, highlighting the importance of language proficiency. However, it has several gaps, including the lack of clear definitions for thresholds, the neglect of social and cultural factors, and an overemphasis on cognitive outcomes. The hypothesis also tends to assume a static and balanced view of bilingualism, which might not reflect the lived experiences of many bilingual individuals. Future research should aim to clarify these thresholds, consider more holistic aspects of bilingualism, and examine how bilingualism interacts with cognition in more dynamic and fluid ways.

The Dynamic Systems Approach

Recent research has embraced a *Dynamic Systems Approach* to bilingual language development, which views language acquisition as a complex, adaptive process influenced by various internal and external factors (Verspoor et al., 2021). This perspective acknowledges that bilingual development is not linear but rather a dynamic interaction between the learner's cognitive systems and their sociocultural environment. For instance, researchers have demonstrated how factors like exposure to language at home, the sociolinguistic context, and educational policies affect bilingual learners' language trajectories (Blom, 2020).

The Dynamic Systems Approach (DSA) to language development and cognition, rooted in general systems theory and dynamical systems theory, conceptualizes development as a complex, non-linear, and context-dependent process. It has been applied to various domains, including cognitive psychology, language acquisition, and bilingualism. The core idea is that cognitive development, particularly language learning, emerges from the dynamic interplay between multiple factors (biological, environmental, and social) and is constantly evolving rather than following a predetermined or linear trajectory. Here's an in-depth analysis of the Dynamic Systems Approach, focusing on its benefits, gaps, and implications for research and practice.

Key Concepts of the Dynamic Systems Approach

Non-linearity and Complexity: Development is not a linear process with predictable stages. Instead, it involves fluctuations, regressions, and leaps. Small changes in one aspect of the system can result in significant changes elsewhere due to the interconnectedness of the system. Language learning, for example, doesn't occur in a steady, predictable way. Children may experience rapid progress, plateaus, or even temporary regression in certain linguistic domains, reflecting the non-linear nature of the process.

Emergence and Self-Organization: Cognitive and linguistic abilities "emerge" from the interaction of various factors rather than being pre-programmed or unfolding in a predetermined manner. This is a bottom-up process, where complex patterns and behaviors emerge from relatively simple interactions over time. For instance, a child's ability to form complex sentences emerges from the interaction of cognitive maturation, social interaction, and exposure to language, rather than being simply the result of internal mechanisms like a language acquisition device.

Interconnected Systems and Context Sensitivity: In DSA, development is the result of multiple interconnected systems (e.g., biology, environment, culture, social interaction) interacting with one another. Changes in any one system (such as a shift in environmental input) affect other systems, resulting in dynamic changes in behavior and development. The theory highlights how children's linguistic development is influenced by variables such as family environment, schooling, peer interactions, cultural norms, and even socioeconomic factors.

Attractors and Stability: In DSA, "attractors" are stable states or patterns that systems tend to gravitate towards. Language learners may reach certain stable linguistic patterns (e.g., stable grammatical structures), which can be disrupted or reorganized by new learning experiences or developmental shifts. These stable states can last for a long period or change quickly in response to significant contextual shifts, illustrating the fluid nature of development within a dynamic system.

Benefits of the Dynamic Systems Approach

DSA emphasizes the interplay between individual and contextual factors, providing a more holistic understanding of development. This includes considering biological, cognitive, social, and environmental elements as all playing interdependent roles in language acquisition and cognitive development. Traditional theories often focus on isolated components, such as purely cognitive mechanisms or purely social influences. DSA allows researchers and educators to understand how these components interact dynamically over time.

The approach accounts for variability between individuals. Each person's development trajectory is unique, shaped by a complex set of factors and interactions, which DSA acknowledges as

central to the learning process. It challenges the idea of universal, normative developmental stages (common in stage-based theories) by highlighting that children's language learning trajectories are highly individualized and influenced by their unique contexts. This is especially beneficial in understanding diverse learners, such as bilinguals.

DSA recognizes that development is not linear or predictable. Children do not progress through fixed, preordained stages, but rather exhibit periods of rapid growth, plateau, or even regression, depending on contextual shifts. This is critical for understanding language acquisition, where learners often show rapid bursts of progress followed by periods of consolidation or stagnation. The non-linear perspective aligns with empirical data showing these variations, which traditional models struggle to explain.

DSA focuses on real-time interactions and immediate feedback loops in development. For example, children may modify their linguistic behavior based on immediate responses from their environment, which dynamically shapes their subsequent language use. This real-time focus allows for a richer understanding of language acquisition as a situated process, responsive to context and feedback, rather than a step-by-step unfolding of innate linguistic competence.

In multilingual and bilingual contexts, DSA is particularly useful because it can account for the dynamic interplay of multiple languages in an individual's mind, the influence of different linguistic environments, and the shifting dominance of one language over another. DSA offers a more accurate and flexible model for understanding how bilinguals juggle two (or more) languages, often shifting back and forth between them based on context, age, or level of proficiency.

Gaps and Criticisms of the Dynamic Systems Approach

One of the major criticisms of DSA is its lack of specificity when it comes to predicting developmental outcomes. Since DSA emphasizes the complexity and uniqueness of each individual's developmental path, it becomes difficult to make generalized predictions about language learning or cognitive development. While DSA is excellent at describing processes, it lacks the precision necessary to offer clear predictions or practical guidelines for educators or clinicians. Without specific indicators or milestones, it is harder to assess whether a child's development is typical or atypical, or to intervene in a targeted way.

DSA's emphasis on the vast number of interacting factors in development can make it difficult to apply in practical settings. Educators, clinicians, or policymakers may struggle to implement a framework that incorporates so many variables without clear guidelines on which factors should be prioritized. In real-world contexts such as classrooms or clinical settings, practitioners often need clear, actionable strategies. The high level of complexity in DSA can make it challenging to provide concrete recommendations for interventions or instructional methods.

Measuring and operationalizing the constructs within DSA is challenging. Concepts such as dynamic interaction and emergence are theoretically appealing but difficult to quantify in empirical research. Traditional research methods struggle to capture the dynamic, real-time processes that DSA emphasizes. For DSA to become more mainstream in developmental research, it needs clearer methods for measurement. Most traditional cognitive research focuses on static measures (e.g., language tests, cognitive assessments), which may not be sufficient to capture the fluid processes that DSA highlights.

While DSA has strong theoretical appeal, empirical support remains relatively limited. Many of the claims are difficult to test using standard experimental methodologies. Longitudinal and real-time studies are needed to fully assess how systems evolve over time, but these studies are complex, resource-intensive, and difficult to design. Without strong empirical support, it is difficult to justify a widespread shift toward DSA. Many traditional cognitive theories, despite their limitations, have extensive empirical backing, which makes them more attractive to researchers and practitioners.

While DSA recognizes that biological systems (e.g., brain development, neural plasticity) are part of the dynamic system, critics argue that it does not give enough weight to biological constraints on development. In contrast, traditional models like the critical period hypothesis focus more on how biological factors (like age) limit or facilitate language learning. Biological factors play a crucial role in cognitive development, and while DSA includes them as part of the system, some researchers feel that it underrepresents their importance, particularly in areas like language acquisition, where sensitive periods are a well-documented phenomenon.

In conclusion, the Dynamic Systems Approach offers a robust framework for understanding the complexity, fluidity, and context-dependence of language and cognitive development. It emphasizes the non-linear, emergent, and context-sensitive nature of developmental processes, offering a more holistic and flexible perspective than traditional stage-based or modular theories. However, the approach also faces significant challenges. Its complexity can make it difficult to apply practically or to measure empirically, and it often lacks the predictive power needed for intervention or educational planning. Furthermore, DSA's under emphasis on biological constraints and its challenges in providing specific guidelines for practice make it less appealing for those who seek concrete, actionable insights. Overall, DSA has great potential to reshape our understanding of cognitive development, but more empirical research and clearer methods of application are necessary for it to become a practical framework in educational and clinical contexts.

Cognitive and Academic Implications of Bilingualism

Cognitive Flexibility and Executive Function Bilingualism has been linked to improved cognitive flexibility and executive function, with significant implications for learning. In their

meta-analysis, Grundy and Timmer (2022) found that bilingual children consistently performed better on tasks requiring cognitive flexibility, attention control, and problem-solving skills compared to their monolingual peers. These cognitive advantages suggest that bilingual learners may have an enhanced ability to switch between tasks and apply learning strategies in diverse contexts.

Academic Performance and Literacy Bilingualism's effect on academic performance has been the subject of ongoing debate. Some research suggests that bilingual learners may initially struggle with literacy development, particularly in contexts where their first language (L1) differs significantly from the language of instruction (L2). However, over time, bilingual learners often catch up or surpass monolingual peers, particularly in reading comprehension and vocabulary acquisition (Verhoeven & Perfetti, 2022). Furthermore, López et al. (2023) highlight that strong literacy skills in both L1 and L2 are associated with better academic outcomes, reinforcing the importance of supporting both languages in educational settings.

Sociocultural Influences on Language Development the sociocultural environment plays a critical role in bilingual development. According to García and Wei (2020), bilingual language development is shaped by cultural, familial, and educational contexts. The *Translanguaging* theory, which emphasizes the fluidity with which bilinguals move between languages, has gained prominence in explaining how learners leverage all their linguistic resources in the classroom. Researchers like Valdés (2021) argue that recognizing the legitimacy of students' home languages in academic settings enhances bilingual learners' engagement and academic achievement.

Conclusion and Recommendations

Bilingual language development is a multifaceted process influenced by cognitive, academic, sociocultural, and motivational factors. Theories such as the Bilingual Advantage Hypothesis, Threshold Hypothesis, and Dynamic Systems Approach provide essential insights into how bilingual learners acquire and use two languages in learning environments. Recent research highlights the cognitive flexibility and academic benefits of bilingualism, while also acknowledging the complex interactions between language exposure, motivation, and sociocultural context. As global diversity continues to grow, understanding and supporting bilingual language development is crucial for fostering academic success and cognitive growth in learners.

Based on the findings and discussions surrounding bilingual language development, the following recommendations are proposed to enhance support for bilingual learners in educational settings:

Educational institutions should create programs that foster balanced proficiency in both the first language (L1) and second language (L2). Schools should implement dual-language programs or bilingual curriculums that equally value both languages, allowing students to develop literacy skills in both L1 and L2. Schools and educators should focus on providing high-quality and meaningful language exposure to bilingual learners. This includes integrating both languages into various learning activities and offering opportunities for bilingual students to interact with native speakers in authentic contexts, both inside and outside the classroom. Language interventions should be tailored to the age of acquisition. Early bilinguals require continuous support to maintain their bilingual abilities, while late bilinguals may benefit from targeted interventions that accelerate language learning and address specific challenges they might face in acquiring the second language (L2).

Educational policies should recognize the sociocultural background of bilingual learners by incorporating students' home languages and cultures into the classroom. Using *trans-language* practices, where students can fluidly use both languages, can help learners feel more connected to the content and improve overall engagement. Teachers and parents should foster a positive attitude toward bilingualism and support learners' cultural and linguistic identities. Schools can create an inclusive environment that celebrates bilingualism, encouraging students to see their ability to speak two languages as an asset rather than a challenge. Educators should receive training on effective bilingual education strategies and the cognitive, academic, and sociocultural needs of bilingual learners. Professional development programs should focus on equipping teachers with the tools to support diverse language learners in their classrooms, including managing language differences and leveraging bilingual students' skills for academic success. Schools should work closely with parents and communities to support bilingual learners. Encouraging parents to maintain the home language while learning the school language can help sustain bilingualism. Community programs that promote bilingualism and offer resources for both students and families can also play a significant role in supporting language development.

By implementing these recommendations, educational institutions can create supportive environments that maximize the cognitive and academic benefits of bilingualism and ensure that bilingual learners reach their full potential.

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