BILINGUAL DIGITAL STORYTELLING AS A METHOD TO ENHANCE CHILDREN'S ENGLISH LANGUAGE SKILLS: A MICRO-LINGUISTIC PERSPECTIVE

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ABSTRACT

English language learning in early childhood has become a priority in 21st-century education due to the growing global demand for early foreign language competence. However, this process still encounters several challenges, including limited interest, a lack of suitable learning media, and linguistic barriers such as morphological recognition that hinder children's understanding of word structures and meanings. This study aims to enhance young learners' English vocabulary and morphological awareness through the implementation of Bilingual Digital Storytelling (BDS) as a method of interactive and engaging language instruction. A descriptive qualitative design with a Classroom Action Research (CAR) approach was employed at STB Kindergarten, involving children aged 4 to 6 years as participants. Data were collected through classroom observations and interviews, supported by systematically designed observation guides and instruments. The findings revealed that the application of Bilingual Digital Storytelling significantly improved children's English vocabulary mastery from an initial 0% recognition rate to 100% in the second cycle. Furthermore, the method enhanced children's morphological awareness, particularly in identifying word forms and meanings. In addition, BDS effectively increased learner engagement and attention span, making the learning process more enjoyable and participatory.

INTRODUCTION

Early Childhood Education (ECE) in Indonesia has experienced significant growth, particularly in urban and developing regions, as awareness increases regarding the importance of optimizing children's holistic development through structured learning services (Paananen, 2023; Pianta et al., 2020). Among the developmental domains, language plays a central role in shaping children's cognitive and social competence. Therefore, ECE programs function not to formalize early schooling, but to nurture key developmental aspects, including language and literacy, in accordance with children's age and developmental readiness.

Language learning at the early stage serves as a foundation for communicative competence. As emphasized by Lany, Karaman, and Hay (2024), early exposure helps children internalize language use naturally. At the kindergarten level (ages 4–6), children begin learning foreign languages such as English or Mandarin, often through play-based activities. Research shows that children of this age acquire language effectively when learning occurs in a supportive, engaging environment with minimal instructional interference (Kurniawan et al, 2024). Hence, early English introduction has become increasingly integrated into ECE curricula.

Despite children's natural aptitude, several challenges remain in early English instruction. Teaching procedures for young learners differ substantially from those for older students due to differences in interests, needs, and learning contexts (Leona et al., 2021). A limited attention span, typically lasting 20 to 30 minutes per session, requires varied and playful learning activities (Parker & Thomsen, 2019). Furthermore, vocabulary development remains a key issue, as young children best understand words that are concrete and closely related to their everyday environment, such as household items, family members, or familiar toys (Meylan et al., 2023; Güngör & Önder, 2023).

Vocabulary mastery is also closely tied to morphological awareness, the understanding of word forms, bases, and affixes, which supports pronunciation and meaning construction. Morphological complexity often poses obstacles for early learners, indicating that vocabulary development should be approached as part of broader microlinguistic growth rather than isolated memorization (Syamsuar, 2024). Previous studies have largely emphasized vocabulary enrichment and communicative competence but have seldom examined how digital or storytelling-based methods can strengthen morphological understanding. This gap highlights the need for approaches that merge linguistic depth with engaging pedagogy.

In this regard, Bilingual Digital Storytelling (BDS) emerges as a promising method that integrates interactive digital media with dual-language narratives to promote vocabulary acquisition and morphological awareness simultaneously. Through repeated and enjoyable exposure to meaningful language input (Kurniawan, 2017; Anis, 2023), BDS has the potential to enhance both comprehension and attention among young learners. Therefore, this study aims to analyze the implementation of Bilingual Digital Storytelling in early English learning, focusing on its impact on children's vocabulary recognition, morphological development, and overall engagement.

The methods currently being developed in language learning for children have begun to accommodate the needs and characteristics of early childhood learning. There are several forms of developing methods, such as the use of gestures in Total Physical Response (Kenjabaev, 2024), the use of technology assistance, such as audio, video, and images supporting the learning (Lampai & Sukying, 2023), and even the combination of storytelling methods with digital technology supporting activities, as in Digital Storytelling. The developing methods also have a development trend in accordance with the interest of students who get learning services using the method (Yang, Chen & Hung, 2022) by integrating an innovative way og teaching to gain creative and critical thinking in learning language (Kurniawan & Setyaningtyas, 2024). Now, the Digital Storytelling method is being used in many countries, including Indonesia, where one method that develops in teaching English to children is by telling stories or storytelling. This is based on the fact that this method is a development of conventional storytelling methods that have been known for decades, with the advancement of digital technology, which certainly cannot be ignored. Aside from being suspected of being able to provide value for attraction (Kurniawan, 2021), the Digital Storytelling method can accommodate learning needs in terms of content that can also improve English language skills in children, which refers to the basis of content and language

integrated learning, where children learn the material while studying language aspects (Ong & Aryadoust, 2023).

Based on this background, it can be concluded that recently there has been a trend of foreign learning, namely English for pre-school children (ages 4-6 years). Learning English among early childhood children can develop children's potential well when it is adjusted to the needs and characteristics of children's language learning. Children who still have a limited duration of attention and need to familiarize themselves with learning English with the support of a learning environment that enriches the learning process need to be supported by choosing the right language learning method. One method that can be considered is Digital Storytelling, combining the method of telling stories or talking that is commonly done in the context of education in Indonesia with the support of digital technology, deemed as fun learning since it attracts children's attention in the process of learning and develops English language skills (Kurniawan et al, 2024). Therefore, this study aims to find out how the Digital Storytelling method improves children's English language skills, especially in the aspects of vocabulary mastery, and what pedagogical implications arise from the application of these methods in learning children aged 4-6 years in schools that become the object of research.

Over the past decade, foreign language education has expanded rapidly worldwide, including in Indonesia, where English, recognized as an international language, has been increasingly introduced at various educational levels (Onishchuk et al., 2020; Zuparova, Shegay, & Orazova, 2020; Yilmaz, Topu, & Tulgar, 2022). Many parents and educators believe that early exposure to English equips children with essential skills for future academic and global communication needs. Cognitive studies further suggest that children below seven years of age possess higher neural plasticity for language learning, allowing them to acquire new linguistic input through the same neural mechanisms used for their first language. Conversely, children above that age begin processing foreign languages in separate cognitive systems (Topsakal & Topsakal, 2022).

According to Krashen's Natural Approach (in Kalantari & Hashemian, 2015), children can acquire languages naturally with minimal formal instruction, as their innate linguistic capacity responds effectively to rich language exposure. However, as Massaroni (2024) notes, relying solely on natural acquisition without structured guidance limits children's comprehension and vocabulary growth. Therefore, effective early English instruction should balance natural exposure (acquisition) with guided learning (nurture), ensuring that children receive both spontaneous and scaffolded opportunities to develop linguistic competence.

While research supports English instruction for learners aged 4–6 (Lee, Heo, & Moon, 2022), several challenges persist in achieving optimal outcomes. At this developmental stage, children are capable of learning up to 1,500 words, yet they still struggle with attention control, requiring learning sessions limited to 20–30 minutes and designed with varied, play-based methods (Parker & Thomsen, 2019). In addition, limited tolerance for frustration during learning, especially in online or structured classroom settings, further constrains engagement (Khatoony & Nezhadmehr, 2020). These cognitive and behavioral limitations make sustained vocabulary learning and language awareness difficult to maintain.

Beyond attention span and vocabulary challenges, an often-overlooked aspect is microlinguistic development, particularly morphological awareness, which underpins vocabulary comprehension and word formation. Although many studies have explored vocabulary teaching in early English education, few have examined how innovative media, such as digital storytelling, can simultaneously nurture vocabulary growth and morphological understanding. Some reviews of digital storytelling literature in ECE and documents the concentration of studies on engagement and vocabulary/narrative gains while pointing to gaps in finer-grained linguistic outcomes (e.g., morphology); vocabulary and comprehension gains from digital storytelling interventions but focuses on lexical/narrative outcomes rather

than explicit morphological awareness, illustrating the common topical split; and explicit morphology instruction reliably improves vocabulary and literacy outcomes in primary learners, but the meta-analysis highlights that morphology research is typically separate from multimedia/digital storytelling literatures (Purnama et al, 2022; Colenbrander et al, 2024; Belda-Medina & Goddard, 2024).

Addressing this gap, the present study investigates the use of BDS as an engaging pedagogical approach that merges linguistic depth with interactive learning. Through narrative-based digital media, BDS provides repetitive and contextual language exposure that enhances vocabulary retention while strengthening morphological awareness. This study thus seeks to explore how BDS can improve both linguistic proficiency and engagement in early English learning. In contrast to earlier research that primarily examined broad vocabulary growth, this study highlights more fine-grained linguistic features, particularly morphological awareness, within a bilingual digital storytelling context. It applies a Classroom Action Research-based approach in early childhood environments to explore how children develop these skills. This focus allows for a closer look at the specific language processes involved in young learners' bilingual development.

Not only that, but there are also challenges in terms of the delivery of learning by teachers that could have an impact on the program and the amount of material understood by children. One of them is learning English through reading, which is considered to require a special method if the teacher wants to provide meaningful learning to the child. Learning that is still conventional can have a boredom effect and inhibit children's interest in learning. The inhibition of this interest can affect the number and ability of children to capture learning material (Kurniawan, 2024). Therefore, there is a need for methods or ways of delivering learning that can overcome these challenges so that children can engage in the process of learning English well and meaningfully for developing aspects of their language.

Storytelling is a method that has long been introduced and used in learning, especially language learning. This method is known as the ancient tradition of teaching that has long emerged and developed beyond the cultures that can answer various needs and learning objectives. This method can be adapted to various variations and patterns and can adjust the form of learning, such as written learning and oral learning (Kurniawan, 2021). Because this method can adjust to various variations and developments, a form of development of this method appears, which is believed to be more up-to-date and can be accepted in the digital native era or the era where almost all forms of activities are coordinated with electronic technology. The method of integrating storytelling with digital technology is called Digital Storytelling.

Digital Storytelling is an innovation of the conventional storytelling method that has long been used in education. The advantage of this method lies in its visual and audio appeal, which increases children's attention and participation during the learning process. In addition, this method allows the integration of learning content with linguistic aspects simultaneously, in line with the Content and Language Integrated Learning (CLIL) approach. From a micro-linguistic perspective, the use of the Digital Storytelling method not only has an impact on increasing the number of vocabulary mastered by children, but can also help develop micro-linguistic aspects. Children who are accustomed to hearing and saying words in the context of stories will more easily recognize sound patterns, word forms, and sentence structures that are often used in English, thereby strengthening their micro-linguistic competence, especially on elements that are being emphasized gradually (Khasanah, 2024). Digital storytelling is a method of telling stories using digital media with a range of 2-5 minutes of audio-visual clips combined from images or photos with sound through a narrative story (Nicoli, Henriksen, Komodromos & Tsagalas, 2022). This method is also interpreted as an art of combining stories with displayed reading texts, supporting voices, recorded narratives, to music, and

videos. Media in Digital Storytelling tend to be short and use computers or similar electronic devices in their operation (Nair, Viknesh, & Yunus, 2021). In general, it can be concluded that this method is the latest method that uses sound image technology as a supporter of storytelling activities in learning.

Thus, there is a need to explore digital story-based English and Indonesian language learning methods (BDS) that are not only interesting and enjoyable for children, but also effective in developing language skills from a micro-linguistic perspective, especially attention to morphological elements. This method can be used as a strategic alternative in English learning at the early childhood education level, especially for children aged 4–6 years who are still in the early stages of second language acquisition. Based on this background, this study aims to examine how bilingual digital storytelling can improve early childhood English language skills from a micro-linguistic perspective, particularly in morphology in vocabulary mastery, the use of simple sentence structures, and pronunciation. In addition, this study will also identify the pedagogical implications of applying this method in the context of early childhood education in Indonesia.

RESEARCH METHOD
Research Design
This study employed a Classroom Action Research (CAR) design, which is particularly appropriate for investigating pedagogical interventions aimed at improving learning outcomes. The CAR framework used in this study follows the model proposed by Kemmis and McTaggart (2014), consisting of four cyclical stages: planning, acting, observing, and reflecting. Each cycle was conducted over two weeks, allowing researchers and teachers to collaboratively identify problems, implement the intervention, and evaluate its effectiveness before revising subsequent actions. This iterative process ensured that continuous improvements were made in each phase of implementation (Hollingsworth, 1997). The research was conducted in an early childhood classroom setting, focusing on children aged 4–6 years. The primary objective was to assess how the BDS method influences English language development, particularly in the microlinguistic aspect of morphology. The study also aimed to explore pedagogical implications and identify potential challenges in applying the BDS method in real classroom contexts. This study was carried out in two cycles. In the first cycle, the implementation of Bilingual Digital Storytelling emphasized familiar vocabulary introduction through bilingual narratives. Based on reflection and observation results, adjustments were made in the second cycle to increase interaction, morphological reinforcement, and visual engagement.

Subject
The participants in this classroom action research were 33 children aged 4 to 6 years enrolled at STB Kindergarten in Salatiga, Indonesia, a representative institution for early childhood education at the kindergarten level. The study employed a total sampling technique, as all children in the targeted age group were included to ensure comprehensive and representative data of the learning population. The group consisted of 17 boys and 16 girls, distributed across two classes, each facilitated by one teacher and one assistant, resulting in a favorable teacher–student ratio of approximately 1:8. Most of the children were monolingual Indonesian speakers with limited prior exposure to English, making them suitable participants for early bilingual learning intervention. The learning environment supported digital media integration, with access to projectors and audio devices used in the BDS sessions. Ethical considerations were maintained throughout the study. Parental consent was obtained prior to the data collection by the involvement of the school principal's

communication. Participants' identities were kept confidential, and all classroom observations were conducted in a supportive and non-intrusive manner.

Instruments

Since this research is a classroom action research study, the researchers employed instruments deemed relevant and appropriate to ensure the data collected were sufficient for thorough analysis. One of the primary instruments used for data collection in observing classroom conditions was an observation guideline. These guidelines were meticulously developed by the researchers to align with the specific data requirements of the study. The observation guide included detailed sections such as the identity of the observation sheet, the time of observation, the grade levels involved, the observers' identities, the learning content being covered, specific points of observation, and notes on the results of the general observations. To ensure reliability, inter-rater observation was conducted, and consistency between observers was checked after each session. Additionally, to gather data on learning outcomes, the researchers used a student assessment sheet. This instrument was designed to systematically capture various aspects of student performance and learning. The assessment sheet included fields for the identity of the assessment, the time of data collection, the class level, the assessor's identity, specific aspects of the assessment being conducted, the names of the students being assessed, the vocabulary assessment, and general information related to the assessment context. A student assessment sheet was also used to record children's learning outcomes, particularly their vocabulary and morphological recognition. This instrument underwent pilot testing to confirm clarity and applicability. The assessment sheet contained detailed fields such as student and assessor identity, time, assessed aspects, and contextual notes. These systematically structured and validated instruments supported accurate and reliable analysis of classroom dynamics and children's English language development.

Data Analysis

The data for this study were collected using various techniques tailored to the specific types of data required. The primary technique involved observation. Initially, researchers developed detailed observation guidelines, which outlined the parameters and focus areas for the observations. Using these guidelines, researchers systematically observed the learning process, documenting children's performance and all forms of responses elicited during the teaching-learning activities. This meticulous recording aimed to capture a comprehensive picture of how children interacted with and responded to the educational interventions. In addition to observation, interviews were employed as a supplementary data collection method. These interviews primarily involved students, utilizing simple, open-ended questions designed to elicit descriptive answers. The goal was to gather insights into the children's experiences and perceptions of the application of Bilingual Digital Storytelling methods. By asking open-ended questions, researchers aimed to obtain rich, qualitative data that provided a representative view of the students' engagement and learning outcomes. This interview technique was also extended to classroom teachers, who possess in-depth knowledge of the students' learning behaviors and habits. The teachers' perspectives added another layer of understanding, ensuring that the data collected was both comprehensive and nuanced, reflecting multiple viewpoints within the educational setting. This multifaceted approach to data collection ensured a robust and detailed analysis, contributing to the study's overall validity and depth.

The collected data in this study will undergo a multistage analysis process. Firstly, to evaluate the effectiveness of the Bilingual Digital Storytelling method implemented through action research, researchers will analyze the data based on the achievement levels of children's abilities as recorded in the observation guidelines and assessment instruments. This

initial stage focuses on quantifying and qualifying the children's performance and engagement with the method. Secondly, to understand the pedagogical implications of applying the Bilingual Digital Storytelling method, researchers will conduct a thorough analysis of both the interview data and descriptive observations. This qualitative data will be presented in a descriptive format, detailing the conditions observed during data collection. The analysis will ensure objectivity through data triangulation, which involves cross-verifying data from multiple sources to identify consistent patterns and insights.

Moreover, the study will address the challenges encountered in applying the method by analyzing feedback and observations from the interviews. These insights will highlight any obstacles faced and provide a comprehensive understanding of the practical aspects of implementing Bilingual Digital Storytelling in the classroom. In evaluating the research, specific indicators and criteria have been established as benchmarks. These benchmarks are derived from Allen & Marotz's (2010) "Developmental Profile: Pre-Birth through Twelve," which outlines the language development milestones for children aged 4-6 years. According to this developmental framework, children within this age range begin to learn a second language, such as English, and can typically acquire 5-10 new vocabulary words. These indicators will serve as reference points to measure and assess the progress and outcomes of the children's language development throughout the study.

RESEARCH FINDINGS AND DISCUSSION
Research Findings

This section presents the results of the classroom action research conducted in Kindergarten A and B at STB Kindergarten, Salatiga, Indonesia, following Hollingsworth's action research cycle. The findings are organized according to the stages of implementation, beginning with data collected during the pre-cycle stage prior to the intervention.

Table 1
Results of vocabulary skill achievement in pre-cycle

Pre-Cycle	Morphological Aspect Indicator							
	Child's ability to mention English vocabulary							
	Criteria							
	Good (6-7 words)		Fair (4 - 5 words)		Less (2 - 3 words)		Unable (≤ 1 word)	
	Freq	%	Freq	%	Freq	%	Freq	%
Class A	0	0	2	11,8	3	17,6	12	70,6
Class B	0	0	0	0	13	76,4	3	17,6
Total	0	0	2	6,0	16	48,5	15	45,5

From the results of observation in the pre-cycle, the results is presented in Table 1. The number of children who have very little mastery (unable) of fruit vocabulary in English still dominates, namely a number of 12 children (70.6%) out of 17 in class A. Three children (17.6%) can name 2-3 English vocabulary, even though it still counts as less mastery. Those who are quite mastered (fair) by mentioning between 4 - 5 words were only 2 children (11.8%), and no one can mention 6-7 correct (good) vocabulary in English. Meanwhile, in class B, the number of 3 children (17.6%) were unable to master the vocabulary by only mentioning 0 - 1 vocabulary. In the less criteria, where children can mention between 2-3 English vocabulary a number of 13 children (76.4%). This number, which in the pre-cycle dominates in class B. Then, no single child is included in the criteria for fair mastery, and even good in English vocabulary.

Table 2 shows the results of the observation of English vocabulary mastery in cycle I. Observations were still conducted in two classes with a total of 33 students.

Table 2
Results of vocabulary skill achievement in cycle I

Cycle I	Morphological Aspect Indicator							
	Child's ability to mention English vocabulary							
	Criteria							
	Good (6-7 words)		Fair (4 - 5 words)		Less (2 - 3 words)		Unable (≤ 1 word)	
	Freq	%	Freq	%	Freq	%	Freq	%
Class A	0	0	2	11,8	12	70,5	3	17,7
Class B	0	0	4	25,0	12	75,0	0	0
Total	0	0	6	18,2	24	72,7	3	9,1

From the results of observations in cycle I, the results of achievements are presented in Table 2. The number of children who were included in the criteria of unable in class B was around 3 children (17.7%). Then, children with less mastery criteria are still high, reaching 12 children (70.5%). In sufficient (fair) criteria, there were 2 children (11.8%) who showed ability by mentioning between 4 - 5 English vocabulary words. Meanwhile, no children achieved a good skill achievement from the data gathered during this cycle. In general, an increase occurred by reducing the unable category to 3 and increasing the fair category to 6. In class B, there were no child who were included in the unable criteria. There was a decrease in the number of less mastering fewer criteria, which ranged from 12 children (75.0%) to 16 children. Children who were in the fair criteria increased to 4 children (25.0%). However, there were still no children who had a good vocabulary mastery in class B. The increase was seen in sufficient criteria that almost the same number still appears in the less criteria, and there was a reduction in the number of children in the unable criteria.

In cycle II, an increase tended to be good in terms of mastery of English vocabulary. Media modification in the Bilingual Digital Storytelling learning method showed that there was a change in the reaction of students related to their interest and involvement in teaching learning process in STB Kindergarten. Table 3 shows details of children's achievements in various criteria.

Table 3
Results of vocabulary skill achievement in cycle II meeting 1

Cycle II Meeting 1	Morphological Aspect Indicator							
	Child's ability to mention English vocabulary							
	Criteria							
	Good (6-7 words)		Fair (4 - 5 words)		Less (2 - 3 words)		Unable (≤ 1 word)	
	Freq	%	Freq	%	Freq	%	Freq	%
Class A	0	0	15	88,2	2	11,8	0	0
Class B	7	43,7	9	56,3	0	0	0	0
Total	7	21,2	24	72,7	2	6,1	0	0

In the cycle II meeting 1, there was a good increase in vocabulary mastery in learning English in early childhood at STB Kindergarten. None of the children included in the unable criteria in class A. While in the same class, the number of children who less mastered the vocabulary also decreased to 2 children (11.8%). Children who have fairly mastered in vocabulary appear to be the most among the four existing criteria, which is 15 children (88.2%), and no child can answer 6-7 words that are classified as good. In the cycle II meeting 2, the data obtained is presented in Table 4. The following are details of the

achievement of children's English language skills, which are viewed from the four achievement criteria. Meanwhile, in class B, there were no children included in the criteria unable and less mastery. The increase occurred in the criteria of sufficient (fair) English vocabulary mastery for more than half of the total respondents. The number of children at this level was 9 (56.3%). Then, children who have good mastery in mentioning vocabulary were about 7 children (43.7%). In class B, the improvement seems to be significant.

Table 4
Results of vocabulary skill achievement in cycle II meeting 2

Cycle II Meeting 2	Morphological Aspect Indicator							
	Child's ability to mention English vocabulary							
	Criteria							
	Good (6-7 words)		Fair (4 - 5 words)		Less (2 - 3 words)		Unable (≤ 1 word)	
	Freq	%	Freq	%	Freq	%	Freq	%
Class A	17	100	0	0	0	0	0	0
Class B	16	100	0	0	0	0	0	0
Total	33	100	0	0	0	0	0	0

Data obtained from observation and assessment of learning in STB Kindergarten classes A and B both showed optimal results. A total of 17 children (100%) in class A can already mention 6-7 English vocabulary, which is included in the good category. Meanwhile, the total children in class B, namely 16 children (100%) were also able to speak the English vocabulary that was taught properly and correctly. So, in the cycle II meeting 2, the passing grade was reached by a total of 33 children in the TK B STB who were able to use English vocabulary well according to their age and development.

Discussion

The findings of this study demonstrate that the implementation of Bilingual Digital Storytelling significantly enhanced children's English vocabulary recognition and morphological awareness compared to conventional storytelling methods. Prior to the intervention, English learning activities at STB Kindergarten largely relied on teacher-centered approaches such as lecturing and static picture storytelling. These traditional practices were limited in engaging children's attention and failed to sustain focus beyond a few minutes. Observations confirmed that children's concentration typically declined after 6–7 minutes, leading to distraction and off-task behavior. This pattern aligns with Parker and Thomsen's (2019) assertion that young learners' attention spans are naturally short and require engaging, multimodal input to sustain effective learning.

Through the integration of digital visual and audio elements, BDS transformed the classroom dynamic from passive listening to active participation. In the first action cycle, visualizing the story through digital projection created a modest improvement in children's interest, though vocabulary mastery gains remained minimal. The reflection stage revealed that static visuals alone did not sufficiently stimulate interaction or comprehension. Consequently, the method evolved in the second cycle to incorporate audio-visual narratives and teacher-guided play–pause interactions, enabling learners to connect linguistic input with contextual cues such as sounds, gestures, and animated imagery. This modification produced a marked improvement in children's vocabulary recognition and engagement.

The effectiveness of BDS in this study can be explained through dual coding theory, which posits that information presented simultaneously through verbal and visual channels enhances memory and comprehension. The synchronization of spoken narration and visual storytelling helped children associate English words with concrete images, thereby strengthening the encoding process. Similarly, Krashen's Input Hypothesis suggests that

meaningful and comprehensible input is essential for language acquisition. By presenting bilingual narratives that alternated between English and Indonesian, BDS provided linguistic input that was both understandable and contextually supported, facilitating natural acquisition while maintaining instructional structure.

Beyond vocabulary acquisition, this study highlights the contribution of Bilingual Digital Storytelling to microlinguistic development, particularly in morphology. Through repetitive exposure to bilingual narratives, children began to recognize word structures and patterns, such as plural forms and word endings, more accurately. This supports Syamsuar's (2024) argument that morphological awareness develops when children encounter structured linguistic input in meaningful contexts. The multimodal nature of BDS allowed learners not only to memorize words but also to perceive their internal structures, reinforcing the relationship between form and meaning.

The transition from Cycle I to Cycle II clearly shows how pedagogical adjustments enhanced the effectiveness of digital media for language learning. As shown in Table 1, children in the pre-cycle demonstrated very limited English vocabulary mastery, with 70.6% of Class A and 17.6% of Class B unable to name more than one fruit in English. Although Cycle I introduced digital images that improved visualization, the Cycle I results (Table 2) reveal that limited teacher scaffolding left most learners in the "less" category (70.5%), with only 11.8% reaching "fair" mastery by naming 4–5 words. This gap between media exposure and actual learning prompted a redesign of the instructional approach.

Reflecting on these findings, Cycle II emphasized interactive bilingual storytelling, in which teachers paused the videos to ask prediction questions, model repetitions, and check comprehension. The improvement reported in Table 3, where Class A had no children remaining in the "unable" category and only 11.8 percent in the "less" category, while 88.2 percent reached the "fair" level, supports the argument that responsive interaction strengthens children's cognitive engagement with digital content. These shifts also align with Yang, Chen, and Hung (2022), who observed that story-based digital tools increase attention and structural awareness when learners participate actively. Moreover, attention span increases from 2–3 minutes in the pre-cycle to more than 6 minutes per segment in Cycle II, suggesting that multisensory interaction encouraged sustained focus, echoing Kurniawan's (2021, 2024) findings on the role of emotional–cognitive involvement. When children were allowed to respond physically or verbally to the bilingual stories, they showed clearer recognition of morphological patterns as well as vocabulary.

The significant rise in English vocabulary mastery documented in Table 4 further demonstrates the pedagogical value of the revised Bilingual Digital Storytelling approach. By the final cycle, one hundred percent of children in both Class A, with seventeen out of seventeen participants, and Class B, with sixteen out of sixteen participants, achieved a "good" level of mastery by correctly naming six to seven vocabulary items, an improvement that was not observed in earlier cycles. This dramatic increase cannot be explained by repetition alone; rather, it coincides with the morphological gains observed during interactive storytelling sessions. Consistent with Lany, Karaman, and Hay (2024), these results suggest that early bilingual exposure should emphasize the recognition of linguistic patterns instead of relying solely on word memorization. The repeated, contextualized bilingual input provided scaffolding that helped children implicitly identify morphemes and recurring word structures as they followed the narrative. Together, the numerical trends and qualitative observations confirm that the CAR-based BDS approach promoted both vocabulary growth and deeper microlinguistic processing.

Another key finding concerns the affective dimension of BDS. Children showed strong enthusiasm toward the bilingual storytelling format, often expressing eagerness for the next story session. Such emotional engagement plays a vital role in early learning because it

enhances both attention and memory processes. The incorporation of culturally familiar themes within the Indonesian–English stories created an environment that was both comforting and intellectually stimulating. This observation aligns with findings by Anis (2023) and Güngör and Önder (2023), who highlight that familiarity and enjoyment help young learners navigate bilingual input more confidently. In the present study, the combination of local narratives and digital animation not only supported vocabulary learning but also generated cultural relevance, making English exposure feel meaningful rather than repetitive. Additionally, this study provides new insight by showing that culturally grounded bilingual narratives do more than increase motivation. They also create a scaffolded context in which children can more easily detect recurring morphemes and patterns embedded in the story text.

From a pedagogical standpoint, the results emphasize the importance of adaptable teaching methods in early language classrooms. Initially, teachers relied on a traditional, lecture-oriented mode of storytelling, but as they engaged in reflection throughout the Classroom Action Research cycles, they transitioned toward an interactive, learner-centered approach. This shift, from story delivery to story facilitation, illustrates the iterative improvement cycle described by Kemmis and McTaggart (2014). The study further contributes to the field by demonstrating how teacher reflection, paired with digital media, can create conditions that allow microlinguistic practices such as morphological prompting, guided repetition, and meaning negotiation to take place naturally within narrative contexts. This represents a methodological advancement, as few earlier studies have shown how teachers can intentionally integrate morphological cues into digital storytelling moments.

Although the outcomes were positive, several constraints emerged. The effectiveness of Bilingual Digital Storytelling (BDS) relied partly on teachers' technological readiness and the availability of multimedia tools. In contexts where digital resources are scarce or internet access is unstable, adaptations such as offline video playback or simplified animations may be required. Another consideration is the variability in children's prior exposure to English, which may affect how quickly they respond to bilingual narratives. Future research could incorporate differentiated tasks or extended intervention periods to more clearly observe developmental trajectories in morphological awareness over time. Despite these challenges, the study reinforces the growing importance of digital literacy integration in early childhood classrooms. When applied with pedagogical grounding, BDS supports not only stronger engagement but also more precise and deeper linguistic processing. This dual benefit corresponds with Massaroni's (2024) perspective that effective early language teaching must integrate both natural acquisition processes and intentional instructional supports.

In conclusion, this discussion demonstrates that Bilingual Digital Storytelling effectively bridges children's intuitive language-learning capacities with structured linguistic development. By combining visual, auditory, and interactive elements, BDS enhances vocabulary acquisition, promotes morphological awareness, and supports sustained learner engagement. A key contribution of this study is its evidence that digital storytelling can serve as more than entertainment; it can function as a linguistically oriented pedagogical tool that embeds microlinguistic learning opportunities within narrative flow. Furthermore, the explicit integration of morphological focus within bilingual storytelling offers new insight into how young children internalize word structures and linguistic patterns through meaningful narrative exposure. Overall, the study extends existing literature on early childhood English learning by demonstrating that Bilingual Digital Storytelling, when grounded in bilingual and microlinguistic principles, can foster children's cognitive, cultural, and linguistic development simultaneously. It also reaffirms that effective early language pedagogy requires ongoing reflection and contextual adaptation, positioning technology not as a replacement for

teaching but as a collaborative medium that transforms learning into an interactive and developmentally responsive process.

CONCLUSION

The findings of this classroom action research demonstrate that Bilingual Digital Storytelling BDS effectively enhances young children's English vocabulary and supports early micro-linguistic development, particularly in morphological awareness. The integration of digital media with bilingual narratives successfully addressed the challenges of low attention span and limited engagement found in conventional storytelling methods. By combining visual and auditory stimuli, BDS created a dynamic learning environment that sustained children's focus and fostered active participation. This method encouraged learners not only to memorize vocabulary but also to recognize morphological patterns embedded within the stories, indicating progress beyond surface-level lexical knowledge toward meaningful language construction.

Pedagogically, this study underscores that early English learning benefits from interactive and multimodal approaches that bridge natural acquisition and guided instruction. BDS provided balanced exposure between auditory input and contextual visualization, allowing children to internalize word forms and meanings more effectively. The approach aligns with socio-constructivist principles, emphasizing learning through interaction, imitation, and contextual reinforcement. Furthermore, the success of BDS suggests that digital storytelling can function as an effective scaffold for bilingual development, supporting children in understanding how English words relate to their first language through visual and narrative cues.

Theoretically, the research contributes to early language pedagogy by extending the application of digital storytelling from vocabulary enrichment to micro-linguistic competence, showing that technology-enhanced stories can foster awareness of morphology in meaningful contexts. For educators, this implies that English instruction in early childhood should move beyond rote vocabulary learning toward integrated language experiences that stimulate curiosity and comprehension. Future implementations should focus on teacher training in multimedia integration and reflective adaptation of BDS to various linguistic backgrounds. Overall, Bilingual Digital Storytelling offers a promising model for early English education by merging digital literacy, language acquisition, and creative engagement to build strong foundations for children's linguistic growth in a globalized world.

ACKNOWLEDGEMENT

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