

Innovative TEYL: Creating and Assessing a Digital English Book for Kindergarten Students

Aprilian Ria Adisti, Muhamad Rozikan

UIN Salatiga

aprilian@uinsalatiga.ac.id, mhrozikan@gmail.com

Abstract: Globalization has significantly impacted education systems globally, making early English learning essential for future industrial development. This study focuses on: (1) identifying necessary materials for teaching English to young learners (TEYL) in kindergarten, (2) creating a digital English book model that integrates six child development aspects, (3) detailing the model's development process, (4) testing the model in kindergartens, and (5) assessing its effectiveness. Using the ADDIE model, a needs analysis was conducted with 118 kindergarten teachers and 5 students in Salatiga. The digital book design followed eleven steps and was validated by five experts. The model was tested two kindergartens in Salatiga. Findings indicated a need for literacy materials based on the Child Development Achievement Level Standard (STTPA). The digital book, featuring audio and video, enhanced student learning outcomes by 28% at RA Glory Islamic and 49.56% at RA Al-Azhar, achieving an effective N-Gain score of 65.75%. This digital book model thus promotes active, critical, and independent learning among children.

Key words: TEYL (Teaching English to Young Learners); Digital English Book, kindergarten students.

INTRODUCTION

In today's globalized world, English has become the global lingua franca, leading education systems worldwide to incorporate English instruction at younger ages. Many countries have embedded English Language Teaching (ELT) into their primary education curricula, recognizing the critical period before puberty as the optimal time for children to learn a foreign language and achieve native-like proficiency (Pinter, 2017; Ellis, 2016). Scholars such as Pinter (2017) and Ellis (2016) emphasize that this period is vital for language acquisition, as children's brains are more adaptable and better equipped to absorb new languages naturally than those of adults. Theories such as Gass and Selinker's (2016) second language acquisition model further support this, suggesting that language acquisition occurs most effectively when learners are exposed to language in an environment that fosters natural interaction and engagement, which is typically more accessible for younger learners (Gass & Selinker, 2016; Long, 2015).

In Indonesia, while English remains a foreign language and Bahasa Indonesia is the national lingua franca, the importance of early English education has long been acknowledged. Since 2004, Teaching English to Young Learners (TEYL) has been a part of the elementary school curriculum, particularly as a local content subject (Suyadi, 2020; Santoso, 2019). This initiative aligns with global trends and Indonesia's educational policies, which seek to prepare students for the demands of globalization (Suyadi, 2020; Santoso, 2019). The Indonesian government has consistently prioritized early childhood education through various policies, emphasizing the importance of developing children's physical, intellectual, emotional, and social skills as foundations for lifelong learning (MoEC, 2014; Suyadi, 2020; Wijaya, 2021).

However, the implementation of TEYL in Indonesia, particularly at the early childhood level, presents significant challenges. Despite being included in the curriculum, many schools encounter limitations in resources and teaching models that are suitable for young learners (Hidayati, 2019; Kurniawan, 2020). Preliminary studies indicate that, although there is strong demand for early English education, the existing materials and teaching methods fail to adequately integrate the six aspects of child development as outlined by the Ministry of Education and Culture (MoEC, 2014). These aspects—religious and moral values, physical-motoric, cognitive, language, socio-emotional, and art—are essential for a comprehensive approach to early childhood education (MoEC, 2014; Hidayati, 2019; Kurniawan, 2020).

Given these challenges, there is an evident need for innovative and engaging teaching resources that align with both the developmental needs of children and the objectives of TEYL. This study focuses on: (1) identifying necessary materials for teaching English to young learners (TEYL) in kindergarten, (2) creating a digital English book model that integrates six child development aspects, (3) detailing the model's development process, (4) testing the model in kindergartens, and (5) assessing its effectiveness. Using the ADDIE model, a needs analysis was conducted with 118 kindergarten teachers and 5 students in Salatiga (Dewi, 2018; Anwar, 2019). The research topic "Innovative TEYL: Creating and Assessing a Digital English Book for Kindergarten" arises from this context, aiming to fill the gap in current TEYL practices by developing a digital English book that integrates these six developmental aspects (Dewi, 2018; Anwar, 2019). The ultimate objective is to create a resource that not only enhances English language acquisition but also supports the overall growth and development of young learners in Indonesia (Armstrong, 2017; Hughes & Robertson, 2020).

Research in the field of early childhood education, particularly in Teaching English to Young Learners (TEYL), has increasingly recognized the importance of integrating multiple intelligences, scaffolding, and constructivist approaches to enhance learning outcomes (Gardner, 2011; Palincsar, 1998). Howard Gardner's theory of multiple intelligences posits that children possess different kinds of minds and therefore learn, remember, perform, and understand in different ways (Gardner, 2011; Armstrong, 2017). This theory suggests that education should be tailored to the individual strengths of each child, offering diverse learning experiences that tap into their unique intelligences, whether linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, interpersonal, intrapersonal, or naturalistic (Gardner, 2011; Armstrong, 2017). This approach is particularly relevant in the context of TEYL, where young learners benefit from varied and dynamic teaching methods that engage their multiple intelligences and cater to their developmental stages (Armstrong, 2017; Beale, 2019).

Moreover, Lev Vygotsky's constructivist theory emphasizes the role of social interaction and cultural tools in learning (Vygotsky, 1978; Wood, Bruner, & Ross, 1976). Vygotsky argued that children learn best through active engagement in their environment, constructing knowledge through interaction with peers, teachers, and cultural artifacts (Vygotsky, 1978; Wood et al., 1976). His concept of the Zone of Proximal Development (ZPD) is especially pertinent to TEYL, as it highlights the importance of scaffolding—providing children with the support they need to perform tasks just beyond their current abilities (Vygotsky, 1978; Meyer, 2014). This support, often provided by teachers or more capable peers, helps children gradually develop independence in learning (Meyer, 2014; Wood et al., 1976). The integration of digital tools in early language learning can serve as a form of scaffolding, offering interactive and engaging content that supports the development of language skills in a context

that is both familiar and stimulating for young learners (Meyer, 2014; Hughes & Robertson, 2020).

Meyer's work on scaffolding contributes significantly to our understanding of effective learning strategies, particularly in the context of digital media for Teaching English to Young Learners (TEYL) (Meyer, 2014; Van de Pol, Volman, & Beishuizen, 2010). Meyer (2014) emphasizes the need for structured support during the learning process, highlighting the importance of gradually withdrawing this support as learners gain competence and confidence. This approach aligns closely with the principles of the Cognitive Theory of Multimedia Learning (CTML), developed by Mayer (2009). The Cognitive Theory of Multimedia Learning posits that people learn more effectively from multimedia presentations when the material is designed to align with the way our brains process information (Mayer, 2009; Mayer & Moreno, 2003). According to Mayer, multimedia learning involves integrating both visual and auditory materials to enhance cognitive engagement and retention (Mayer, 2009; Mayer & Moreno, 2003). Key principles of CTML include the use of dual channels (visual and auditory) to present information, the coherence principle (eliminating extraneous material), and the modality principle (using spoken text rather than written text for auditory channels) (Mayer, 2009; Mayer & Moreno, 2003).

In the context of TEYL, digital media such as interactive books can embody these principles by offering scaffolded learning experiences that cater to young learners' cognitive processing capabilities (Mayer, 2009; Hughes & Robertson, 2020; Moreno & Mayer, 2007). Interactive books designed with CTML principles can provide immediate feedback, incorporate multimedia elements like audio and video, and engage learners through interactive exercises (Hughes & Robertson, 2020; Moreno & Mayer, 2007). These tools not only support language acquisition by providing repetitive and controlled practice but also help learners construct knowledge more effectively through multimodal presentations (Hughes & Robertson, 2020; Moreno & Mayer, 2007). Thus, integrating CTML principles into digital learning resources can enhance the effectiveness of TEYL by making the learning process more engaging and aligned with cognitive learning processes (Hughes & Robertson, 2020; Moreno & Mayer, 2007).

Furthermore, recent studies have built upon these theoretical foundations to explore the effectiveness of integrating multiple intelligences, constructivist approaches, and scaffolding in TEYL (Beale, 2019; Armstrong, 2017; McCarthy, 2019). For example, research by Armstrong (2017) demonstrates that incorporating activities that engage various intelligences, such as storytelling, music, and physical movement, significantly enhances language retention and comprehension in young learners. Additionally, recent research by Adisti et al. (2023) highlights the importance of innovative teaching resources, such as digital poster books, in enhancing English language education for young learners in Indonesia, emphasizing the need for materials that cater to early childhood education. Similarly, a study by Beale (2019) found that digital tools, when designed with Vygotskian principles in mind, effectively support the language development of children by providing interactive and socially mediated learning experiences (Beale, 2019; McCarthy, 2019).

Moreover, the use of digital books and other media in early childhood education has been shown to align well with the principles of multiple intelligences and constructivism (Hughes & Robertson, 2020; Li, 2018). A study by Hughes and Robertson (2020) found that digital storybooks, which include elements like audio narration, interactive games, and visual

storytelling, can effectively engage different intelligences and provide a rich, scaffolded learning experience. This study supports the notion that digital tools can be instrumental in creating a learning environment that is both adaptive to individual needs and conducive to collaborative learning, in line with Vygotsky's ideas (Hughes & Robertson, 2020; Li, 2018).

In the context of Indonesian education, the integration of these theories into TEYL is particularly relevant given the diverse linguistic and cultural backgrounds of students (Dewi, 2018; Nugraha, 2021; Widiastuti, 2020). A study by Dewi (2018) on TEYL in Indonesia highlights the effectiveness of using a variety of teaching methods that cater to multiple intelligences in improving language acquisition and engagement among young learners. Furthermore, Nugraha (2021) explores the application of constructivist principles in early childhood education in Indonesia, emphasizing the importance of interactive and student-centered learning environments (Nugraha, 2021; Widiastuti, 2020).

These previous studies underscore the necessity of developing teaching materials and methods that are aligned with the developmental needs of young learners, particularly in a multilingual and multicultural context like Indonesia (Dewi, 2018; Nugraha, 2021; Widiastuti, 2020). The current research aims to build on these foundations by creating and assessing a digital English book for kindergarten that integrates multiple intelligences, scaffolding, and constructivist principles, providing a holistic and effective approach to TEYL (Beale, 2019; Armstrong, 2017; Hughes & Robertson, 2020).

This research introduces a significant innovation in Teaching English to Young Learners (TEYL) by developing and evaluating a digital book model that integrates not only theories of multiple intelligences, scaffolding, and constructivism but also encompasses six holistic aspects of child development (Mayer, 2009; Hughes & Robertson, 2020; Nugraha, 2021). The novelty of this study lies in creating a digital book specifically designed to align educational materials with the developmental needs of early childhood learners, utilizing Cognitive Theory of Multimedia Learning (CTML) principles to present engaging and interactive content (Mayer, 2009; Hughes & Robertson, 2020). By incorporating multimedia, immediate feedback, and structured support, this model not only aids in English language acquisition but also reinforces other developmental aspects such as moral values, motor skills, and social abilities (Mayer, 2009; Hughes & Robertson, 2020; Nugraha, 2021). This approach provides a more comprehensive and adaptive solution within the context of English language education in Indonesia, offering an innovative and relevant tool to enhance both learning outcomes and holistic development in young children (Nugraha, 2021; Santoso, 2019).

RESEARCH METHOD

This study is designed to create and evaluate a digital English book for Teaching English to Young Learners (TEYL) in kindergartens using the ADDIE Model, a well-established instructional design framework. The study employs a Research and Development (R&D) approach, structured around the five phases of the ADDIE model: Analysis, Design, Development, Implementation, and Evaluation.

In the **Analysis** phase, the research begins with identifying and analyzing the needs of both students and teachers in TEYL. This phase involves conducting surveys, focus group discussions (FGDs), and interviews, alongside reviewing the current curriculum. The aim is to understand the existing state of English teaching resources, identify gaps, and determine the specific needs of early childhood education stakeholders. This foundational analysis helps

in pinpointing the deficiencies in current digital resources and the specific requirements for the new digital English book.

Then, the **Design** phase follows, where the blueprint for the digital English book is created based on the needs identified in the previous phase. This involves setting clear objectives for the book, developing instructional strategies, and selecting content that aligns with early childhood educational standards. The design emphasizes making the content both engaging and developmentally appropriate for young learners. Attention is given to the aesthetics of the digital book, including design elements such as colors, fonts, and layout, to ensure it is visually appealing and user-friendly for kindergarten students.

During the **Development** phase, the actual creation of the digital English book takes place. The book includes interactive elements such as simple text, illustrations, and audio components, compiled into a digital format compatible with Android devices. This phase also involves validation by a panel of experts, including English teachers, early childhood curriculum specialists, linguists, native speakers, and media experts. Their feedback is crucial for refining the digital book, ensuring it meets educational standards and effectively addresses the needs of young learners.

Moreover, the **Implementation** phase involves deploying the digital English book in selected kindergartens, specifically RA Glory Islamic and RA Al-Azhar. Teachers and students at these institutions use the book in their classrooms, with the research focusing on preparing the learning environment and participants for the integration of the new resource. This phase ensures that the book is effectively incorporated into daily teaching practices.

Furthermore, in the **Evaluation** phase, the effectiveness of the digital English book is assessed through various methods. This includes pre-tests and post-tests to measure improvements in students' English language skills, as well as interviews and observations to gather qualitative feedback. The evaluation aims to determine the impact of the digital book on students' learning outcomes and to identify areas for further improvement.

Meanwhile, the research procedure involves several stages: a needs assessment to gather data on the necessity of a new English digital book, development of the instructional model, validation using the Delphi technique, and final implementation in TEYL settings. Data collection employs a mix of qualitative and quantitative methods, including observation sheets, documentation, pre-tests, post-tests, and semi-structured interviews to gain comprehensive insights into the effectiveness of the digital book. The study's population includes students from RA Glory Islamic and RA Al-Azhar kindergartens, with a sample selected through random sampling. RA Glory Islamic, located in a rural area, has 73 students, while RA Al-Azhar, in an urban area, has 65 students. Validity is ensured through triangulation techniques, and reliability is tested by auditing the research process for consistency and replicability.

Data analysis utilizes a flow analysis model, which encompasses data reduction, presentation, and verification. Quantitative analysis employs the N-Gain formula to measure student performance improvements, categorizing effectiveness based on N-Gain values and percentage ranges. Overall, this study aims to develop and evaluate a comprehensive digital English book for TEYL, addressing the educational needs of young learners and enhancing their English language skills in a meaningful and engaging manner.

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RESULTS AND DISCUSSION

The study sought to address several key aspects of Teaching English to Young Learners (TEYL) in kindergartens, with a particular focus on identifying necessary materials, developing a digital English book model, detailing its development process, testing the model, and assessing its effectiveness. The needs analysis, conducted with 118 kindergarten teachers and 5 students in Salatiga, revealed that current TEYL resources were insufficient in incorporating the six essential aspects of child development as outlined by the Ministry of Education and Culture (MoEC). These aspects—religious and moral values, physical-motoric skills, cognitive development, language acquisition, socio-emotional growth, and artistic expression—were identified as areas needing better integration into teaching materials. Teachers expressed a clear need for resources that effectively engage these developmental areas in a meaningful way.

In response to these needs, a digital English book model was developed. This model comprehensively integrates all six developmental aspects: it includes stories and activities that promote ethical behavior to address religious and moral values, interactive touch-and-drag elements to foster physical-motoric skills, puzzles and problem-solving exercises to support cognitive development, vocabulary-building exercises and interactive dialogues for language acquisition, scenarios and role-play activities to enhance socio-emotional growth, and creative tasks such as drawing and music to encourage artistic expression. The development process followed the ADDIE model—Analysis, Design, Development, Implementation, and Evaluation—ensuring a structured approach to creating a multimedia-rich resource. The book, featuring audio and video elements, was validated by a panel of experts including English teachers, early childhood curriculum specialists, linguists, native speakers, and media experts who provided critical feedback for refinement.

The digital English book was then tested in two kindergartens, RA Glory Islamic and RA Al-Azhar. This involved pre-tests and post-tests to measure improvements in students' English language skills, supplemented by observations and interviews to gain insights into the book's practical use. The assessment results showed a 28% improvement in English skills at RA Glory Islamic and a 49.56% improvement at RA Al-Azhar. The N-Gain score of 65.75% indicated substantial learning gains, and feedback from teachers highlighted increased student engagement and motivation, underscoring the effectiveness of the digital book in enhancing both language skills and overall learning experience.

After knowing that there is a significant difference between the pre-test and post-test, the improvement in student scores is calculated. This calculation uses the improvement formula, which is as follows:

$$\text{Improvement} = \frac{\text{Mean of PostTest} - \text{Mean of Pre Test}}{\text{Mean of Pre Test}} \times 100\%$$

$$\text{Improvement of RA Glory Islamic} = \frac{39,07-30,93}{30,93} \times 100\% = 28,06 \%$$

$$\text{Improvement of RA Al- Azhar} = \frac{40,65-27,18}{27,18} \times 100\% = 49,56 \%$$

At RA Glory Islamic, the improvement of student scores from the pretest to the post-test was 28.06%. At RA Al- Azhar, the improvement of student scores from the pretest to the post-test was 48.56%. Product implementation can improve student learning outcomes by 28% at RA Glory Islamic and 49.56% at RA Al- Azhar.

Furthermore, to determine the level of effectiveness of the product, N-Gain calculations are carried out using SPSS 25. The formula for calculating N-Gain is as follows:

$$N - \text{Gain} = \frac{\text{Mean of Post Test} - \text{Mean of Pre Test}}{\text{Maximum Score} - \text{Mean of Pre Test}}$$

Through calculations using SPSS 25, the N-Gain results and their percentages are presented in Table 4.18 below:

Table 1. 1 Result of N-Gain

| Means | | |
|---------------------|---|------|
| N-Gains | 1 | .647 |
| N-Gain (Percent) | 1 | 518 |

The N-Gain value is 0.6475. The N-Gain value of 0.6475 is between the values of $0.3 \leq 0.6475 \leq 0.7$ From the N-Gain value it can be concluded that the effectiveness of product

implementation is classified as moderate based on the Gain score distribution table in Table 4.19.

Table 1.2 Classification of N-Gain Score

| N-Gain Value | Categories |
|-----------------------|-------------------|
| $g > 0.7$ | high |
| $0.3 \leq g \leq 0.7$ | Moderate |
| $g < 0.3$ | Low |

Meanwhile, the product implementation effectiveness category, judging from its percentage, is in the effective enough category. The N-Gain value in the form of a percentage, which is 65.75%, is categorized as quite effective because it is between 56% -75%.

The results of this study provide valuable insights into the effectiveness and impact of the developed digital English book model on early English education. The needs analysis underscored a significant gap in existing TEYL materials, revealing that many resources did not adequately address the multifaceted developmental needs of young learners. This finding justified the development of a new resource that integrates the six essential aspects of child development.

The creation of the digital English book model addressed these needs by incorporating interactive and multimedia elements aligned with developmental standards. By integrating religious and moral values, physical-motoric skills, cognitive development, language acquisition, socio-emotional growth, and artistic expression, the model offers a comprehensive approach to early childhood education. The inclusion of multimedia elements, such as audio and video, enhances engagement and caters to various learning styles, supporting the principles of Cognitive Theory of Multimedia Learning (CTML) as proposed by Mayer (2009). This approach aligns with the needs of young learners, who benefit from dynamic and interactive content.

The development process, structured around the ADDIE model, ensured that the digital book was systematically designed and validated. The validation process by experts helped refine the content and ensure its alignment with educational standards. The implementation of the book in kindergartens provided practical insights into its effectiveness, with significant improvements in language skills observed in both RA Glory Islamic and RA Al-Azhar. The higher improvement rate at RA Al-Azhar, an urban institution, suggests that contextual factors may influence the effectiveness of digital resources.

The effectiveness of the digital book, as indicated by the N-Gain score and positive teacher feedback, demonstrates its potential to enhance English language acquisition and support other developmental aspects. The increased engagement and motivation among students highlight the value of interactive and multimedia resources in TEYL. These findings support the integration of multiple intelligences, scaffolding, and constructivist principles in early language education, as emphasized by Gardner (2011), Vygotsky (1978), and Meyer (2014).

Overall, this study contributes to the field of early childhood education by providing a comprehensive and innovative digital resource that addresses the developmental needs of young learners. The positive outcomes underscore the potential of digital tools to enhance both language acquisition and holistic development, offering a valuable resource for kindergartens and aligning with global trends in early English education.

CONCLUSION

This study successfully addressed several critical aspects of Teaching English to Young Learners (TEYL) by creating and evaluating a digital English book model designed to meet the developmental needs of kindergarten students. The research was driven by the need to enhance existing TEYL resources, which were found to be inadequate in incorporating the six essential aspects of child development outlined by the Ministry of Education and Culture (MoEC). These aspects—religious and moral values, physical-motoric skills, cognitive development, language acquisition, socio-emotional growth, and artistic expression—are crucial for a comprehensive approach to early childhood education.

The development of the digital English book model, which integrates these developmental aspects, involved a meticulous process following the ADDIE model. This structured approach ensured that the book was created with attention to detail and aligned with educational standards. The book's multimedia elements, including audio and video, were designed to engage young learners and cater to various learning styles, reflecting the principles of Cognitive Theory of Multimedia Learning (CTML).

Testing the digital book in two kindergartens—RA Glory Islamic and RA Al-Azhar—yielded promising results. The significant improvements in English language skills observed in both institutions, with a 28% improvement at RA Glory Islamic and a 49.56% improvement at RA Al-Azhar, demonstrate the effectiveness of the digital book model. The N-Gain score of 65.75% further supports the model's efficacy, indicating substantial learning gains and effective implementation. The study's findings highlight the value of integrating interactive and multimedia resources in TEYL, aligning with theories of multiple intelligences, scaffolding, and constructivism. The positive feedback from teachers and the increased student engagement underscore the potential of the digital book to enhance not only language acquisition but also other aspects of child development.

In conclusion, this research contributes significantly to the field of early childhood education by providing an innovative and comprehensive digital resource. The successful integration of developmental aspects into the digital book model offers a valuable tool for kindergartens, aligning with global trends in early English education and supporting the holistic development of young learners. The study's outcomes suggest that similar approaches could be beneficial in other educational contexts, providing a foundation for future research and development in TEYL.

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