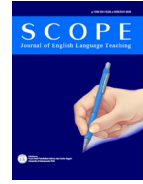




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Review

The Use of Digital-Based English Learning Methods at Early Childhood Education Levels: A Structural Literature

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KEYWORDS

Learning;
 English;
 Early Childhood;
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ABSTRACT

This study aims to examine the structural literature review of digital-based English learning methods at the Early Childhood Education (ECE). The method used is a qualitative method. Data collection used in this study by searching for articles related to English learning at the Early Childhood Education using the *Publish or Perish* application. From the search results, 100 articles were found on learning various subjects based on digital-based education, with details of 19 articles on learning languages other than English and 81 articles in the field of English learning for all levels (ECE, PS, JHS, SHS, and University). The focus of this study is on 8 articles on digital-based English learning at the ECE level. This research method is a structural literature study by collecting information from relevant journal articles. The findings show that digital-based English learning at the ECE level has 8 digital-based learning methods, namely: fun early childhood learning strategies through the TPR (Total Physical Response Method), storytelling, pictures and songs; phonics method; Asset Based Communities Development (ABCD) method; bilingualism program with singing method and TPR (Total Physical Response) with the utilization of audiovisual media; picture message games; pictures and soft skills, and lapbook media. This study is a preliminary research for those who wants to follow up and deepen the similar topic.

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INTRODUCTION

In the ever-evolving digital era, digital technology and artificial intelligence have become integral aspects in various areas of life, including the world of education. The use of digital technology and artificial intelligence in the context of English language learning offers revolutionary potential to improve the efficiency, personalization, and effectiveness of teaching.

By leveraging the capabilities of data analysis and natural language processing, artificial intelligence provides new

possibilities in designing learning experiences that are more adaptive and responsive to learners' needs. The use of digital technology and artificial intelligence in English language learning is not only limited to the automation of the evaluation process, but also includes the personalization of learning materials, the development of speaking, listening, reading, and writing skills, and the creation of interactive learning environments. With this approach, each learner can experience learning that is tailored to their own level of ability and preferences. This paper aims to review narrative literature on the use of

digital technology and artificial intelligence in English language learning referring to the use of digital technology and platforms to support the process of learning and teaching English. The use of digital technology and artificial intelligence in English language learning is not only limited to the automation of the evaluation process, but also includes the personalization of learning materials, the development of speaking, listening, reading, and writing skills, and the creation of interactive learning environments.

With this approach, each learner can experience learning that is tailored to their own ability level and preferences. This paper aims to review the narrative literature on the use of digital technology and artificial intelligence in English language learning referring to the use of digital technology and platforms to support the process of learning and teaching English. This approach has the potential to increase efficiency, accessibility, and interactivity in language learning. The use of artificial intelligence in English language learning can provide various benefits, enrich the learning experience, and improve teaching effectiveness.

The development of digital technology and artificial intelligence has made significant contributions in the context of education, including in language learning. Research by Russell & Norvig (2016) in the book *Artificial Intelligence: A Modern Approach* presents the conceptual development of KB and its application in the context of education. Furthermore, Brown & Yule (1983) in the book *Discourse Analysis* reveals how artificial intelligence algorithms can be used to analyze language structures, helping in better understanding and production of texts.

Research on the influence of artificial intelligence on language skills by McCarthy, J., Minsky, M. L., Rochester, N., & Shannon, C. E. (1955) in the article *A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence* shows the early concepts of artificial intelligence and its impact on the development of language skills in machines. To realize the impact of artificial intelligence in language learning, Woolf (2010) offers an adaptive learning model as published in the journal *Building Intelligent Interactive Tutors: Student-centered Strategies for Revolutionizing E-learning*. This adaptive learning model is to personalize students' learning experiences in language learning. More specifically, Soejatminah (2019) in her research published in the journal *Implementation of Technology-Based Learning in the Era of the Industrial Revolution 4.0* presents artificial intelligence-based learning models that can be applied in English learning.

The social and cultural impacts of using artificial intelligence in language learning are documented in a study by Winfield, A. F. T., Jirotko, M., & Stahl, B. C. (2014) in

the book *Responsible Innovation: Managing the Responsible Emergence of Science and Innovation in Society* highlighting the importance of considering social and cultural aspects in the implementation of artificial intelligence in language learning for responsible sustainability. Regarding the ethics and challenges in the implementation of artificial intelligence in language learning, Floridi, L. (2010) in the article *Information Ethics: Its Nature and Scope* discusses the ethical aspects involved in the use of artificial intelligence in the context of language learning, as well as the challenges that may arise. UNESCO (2020) in the report *Artificial Intelligence in Education: Challenges and Opportunities for Sustainable Development* shows the need to integrate artificial intelligence technology into the English curriculum to support sustainable learning.

The main problem in this paper is the use of digital-based English learning methods at the ECE level so far, and at last purpose of this research is to describe the effectiveness the use of the methods.

METHOD

The method used in this study is a structural literature review. The research approach used is a qualitative approach, which focuses on descriptive data collection and interpretive data analysis. Data collection used in this study by searching for related articles from various literature sources. The author uses the Publish or Perish application (<https://harzing.com/resources/publish-or-perish>.) to search for articles related to digital-based English learning and artificial intelligence techniques, using the search keywords use of artificial intelligence, English learning, and digital. In addition to determining keyword limitations, the author also limits the publication period of the article from 2016-2024. The article is then reviewed systematically and comprehensively to obtain relevant and up-to-date information regarding artificial intelligence in digital-based English learning.

The data analysis technique used in this study is content analysis. Data taken from literature sources are then analyzed and categorized based on their respective themes and discussions. Then, the results of the analysis are analyzed interpretively to obtain conclusions and recommendations regarding effective artificial intelligence techniques in English learning. Overall, the method used in this study is designed to gain a comprehensive and in-depth understanding of digital-based learning in English learning. By using a qualitative approach and content analysis techniques, it is hoped that this study can provide a better understanding of the use of digital learning and artificial intelligence techniques in analyzing English learning.

RESULT AND DISCUSSION

Literature Review of Digital-Based English Learning Methods and Artificial Intelligence Techniques

Findings of digital-based English learning methods and artificial intelligence at the ECE level from search results using the publish and perish application, it can be concluded that digital technology and artificial intelligence used in digital-based English learning at the PAUD level found 8 digital-based learning methods, namely: fun early childhood learning strategies through the TPR (Total Physical Response Method) Method, storytelling, pictures and songs; phonics method; Asset Based Communities Development (ABCD) method; bilingualism program with singing and TPR (Total Physical Response) methods with the use of audio-visual media; songs or games; chain picture message games; picture games; and lapbook media.

The following is a summary of the research results used as a basis for conducting an analysis of digital-based English learning and artificial intelligence techniques.

1. Strategi Belajar Bahasa Inggris yang Menyenangkan untuk Pendidikan Anak Usia Dini (Fun English Learning Strategies for Early Childhood Education (Yus Vernandes Uzer, 2019)

Early childhood has a sensitive period or sensitive to something. All kinds of aspects of language can be introduced to them before this period ends, because after a child is 8 years old, his brain development reaches 80%. Therefore, teachers or educators must try to give their best to take advantage of early childhood by providing strategies that can boost enthusiasm and motivation with what is given, especially for teaching English. As is known, children like something that is fun. For this reason, in learning English, fun early childhood learning strategies can be applied through the TPR Method (Total Physical Response Method), storytelling, pictures and songs) so that it is easier for them to like learning English.

2. Metode Fonik dalam Pembelajaran Membaca Permulaan Bahasa Inggris Anak Usia Dini (Phonics Method in Early Childhood English Reading Learning) by Sharina Munggaraning Westhisi, 2019

This study aims to investigate the implementation of the phonics method in early English reading learning for early childhood. The case study was conducted at I Can Read, an English tutoring institution in Bandung City. This study attempts to analyze the stages of learning and the obstacles faced by teachers in implementing the phonics method. Thematic analysis was used in this study on interview data, observation notes, and documentation studies. The results of this

study indicate that the stages of learning are adjusted to the needs of the children. Then, the obstacles felt by the teachers are time constraints and differences in children's abilities. In addition, teachers believe that the implementation of the phonics method in early English reading learning for early childhood is appropriate because the learning stages start from the introduction of letter sounds, the introduction of letter symbols, to the combination of letter sounds. Learning through the phonics method can be collaborated with playing and telling stories so that the learning atmosphere becomes more enjoyable for children. The conclusion of this study is that the implementation of the phonics method helps teachers a lot to introduce the concept of letter sounds which are the initial foundation in early English reading learning.

3. Pengenalan Pembelajaran Bahasa Inggris Dasar untuk Anak-Anak di Masa Pandemi Covid-19 (Introducing Basic English Learning for Children During the Covid-19 Pandemic) by Hery Rahmat and Wahyu Hidayat Fauzi, 2022

Currently, English is not a compulsory subject at the elementary school level but is only one of the local content subjects. In fact, most elementary schools in Praya City do not provide English as a local content subject. Economic factors and family educational backgrounds that cannot support additional lessons in the form of English learning courses are also inhibiting factors in students' low basic English skills. This further strengthens the stereotype that English is difficult to understand and learn. Learning restrictions during the COVID-19 Pandemic have further weakened students' interest in getting to know and learn English from the beginning. Therefore, this community service activity using the Asset-Based Communities Development (ABCD) method is intended to provide an introduction to basic English learning for children during the pandemic. The community service activity is in the form of a program to introduce basic English material with 13 children as participants. The materials presented are Introducing, Alphabet, Numbers, Days, Things in the classroom, Family, Asking permission, and Giving expressions. The results of this community service show an increase in children's initial understanding of basic English. A good initial understanding of basic English will support children's abilities when communicating using simple English in everyday life.

4. Program Bilingualisme Bahasa Inggris pada Pendidikan Anak Usia Dini (English Bilingualism Program in Early Childhood Education) by Rismareni Pransiska, 2020

The increasing number of Kindergartens implementing bilingual programs has emerged to answer the demands of parents for their children's future related to English language skills. This study aims to examine the implementation, benefits, and methods and strategies for learning English in bilingualism programs. The research method used is library research. The data collection method is the documentation method and the analysis used is content analysis. The results of the study indicate that in implementing bilingual programs, it is necessary to pay attention to the existing curriculum and teacher competencies. Meanwhile, the benefits of implementing this bilingual program show that in addition to fluent English, children also have a positive impact on children's cognitive, intelligence and social behavior. All of the positive things above are supported by methods and strategies that are in accordance with early childhood development such as singing methods and TPR (Total Physical Response) as well as the use of appropriate media such as audio-visual media. The conclusion of this program study shows that bilingualism programs in Early Childhood Education provide positive results on children's language development.

5. ***Pentingnya Pendidikan Bahasa Inggris Pada Anak Usia Dini (The Importance of English Education for Early Childhood)***
by Sarah Nasution, 2016

The purpose of this paper is to find out the importance of English education for early childhood and the appropriate learning methods for learning English for early childhood. This paper uses a literature review method (library research). From the discussion, it can be concluded that English should be taught to children from an early age because of the impact of globalization and English has also become an international language. Learning English for early childhood is done gradually and is taught only as far as knowledge or basics are concerned, not in depth. Learning English can be done in various ways, for example with songs or games so that children do not feel bored and are more enthusiastic in learning English. The role of parents is also important in the learning process by using English at home even for a short time so that children's English continues to develop.

6. ***Penggunaan Permainan Pesan Gambar Berantai untuk Meningkatkan Kosakata Bahasa Inggris Anak Usia Dini (Using Chain Picture Message Games to Improve Early Childhood English Vocabulary)***
by Isitikhoro Nurzaman, Yasbiati Yasbiati, Eka Rahmatty, 2017

This research is motivated by the low mastery of English vocabulary in group B1 RA AL ISTIQOMAH, Cihideung District, Tasikmalaya City in English learning. The low mastery of English vocabulary is caused by the low acquisition of English vocabulary. As one of the efforts to improve English vocabulary is by using a chain picture message game. This study uses classroom action research with a model research design (Kemmis and Mc Taggart), which consists of 3 cycles. Each cycle consists of four stages, namely planning, implementation, observation and reflection. The subjects of the study were children in group B1 RA AL ISTIQOMAH consisting of 6 boys and 5 girls. The instrument used was a structured observation sheet with indicator achievements in each activity. The observation sheet is used to assess English vocabulary mastery using a chain picture message game, and to see teacher performance in learning planning, learning implementation and use of chain picture message games. From the results of the study in cycle I, cycle II and cycle III there was an increase in each cycle. Based on the data obtained, the use of chain picture message games can improve the English vocabulary of early childhood children.

7. ***PKM Meningkatkan Pembelajaran Bahasa Inggris bagi TK-IT Fajar Kompleks Mannuruki Berdasarkan Gambar dan Peningkatan Softskill Remaja Masjid Nurul Ilham di Kabupaten Maros (PKM improves English Learning for TK-IT Fajar Mannuruki Complex Based on Pictures and Improving Soft Skills of Youth at Nurul Ilham Mosque in Maros Regency)***
by Andi Febriana Tamrin dan Muhammad Yusuf Ali, 2019

Community Service (PKM) can increase interest in learning English based on picture books and improve soft skills of teenagers around Nurul Ilham Mosque in the teaching and learning process at Mitra (TK), Manuruki Fajar TK-IT, Simbang district, Maros and English training and welding training to improve soft skills of teenagers at Nurul Ilham Mosque in Simbang sub-district, Maros. The specific objectives of this service are to develop, increase interest in learning and improve the quality of English and welding (soft skills) Some of the methods used in community service (PPM) are question and answer methods and discussions to find out students' general knowledge about picture books and supporting technology, lecture methods are used when presenting material in the form of theoretical knowledge and understanding of software and hardware used along with maintenance that can be done. The demonstration method is used to provide and show the steps in creating a game application. This simulation method is used to show the results of a game application and the success of the application functions

or features that have been implemented. The first target to be achieved in community service (PM) is 18 kindergarten students, educators are able to create fun and interesting teaching and learning activities based on the ability to organize story concepts (stories, stories and materials) and methods in gradual or non-gradual form games by manipulating sound, images, object colors and text in the autoplay application with considerations that are in accordance with the growth and physical development of early childhood. 18 educators can apply the method of playing and learning, the form is to create applications and implement games based on technology specifications and operating system frameworks. Games have image objects, sound objects, labels and objects, can be moved and have stages or ends. Game design from the color of writing, image color objects, backgrounds, sounds or animations is designed. The second target is 26 members of the Nurul Ilham youth mosque with English soft skills training and welding training which are expected to improve language skills and welding skills so that they can be independent by opening a workshop business. or work in a welding workshop and be able to compete in the global market era with the capabilities possessed by English.

8. Efektivitas Penggunaan Media Lapbook dalam Mengenalkan Kosakata Bahasa Inggris pada Anak di Taman Kanak-Kanak (Effectiveness of Using Lapbook Media in Introducing English Vocabulary to Children in Kindergarten) by Latifa dan Elise Muryanti, 2022

This study aims to determine the effectiveness of using Lapbook media in introducing English vocabulary to children at the Sitingau Laut State Kindergarten, Kerinci Regency. The research sample was 20 children at the Sitingau Laut State Kindergarten, Kerinci Regency, consisting of 10 children in the experimental class and in the control class. This study is a quasi-experimental study using pre-test and post-test group control. In this study, data collection techniques were in the form of experiments and observational. Testing the quality of the research instrument by validating it with professional judgment and seeing the results using SPSS 25.0 using the Alpha Crombach technique. Hypothesis testing uses the T-test statistical technique with the help of SPSS 25.0 for windows which shows a significant level of 0.010. Thus it is concluded that the lapbook media is effective in introducing English vocabulary to children at the Sitingau Laut State Kindergarten, Kerinci Regency.

Advantages and Challenges of Digital-Based English Learning

The following are the advantages of digital-based learning and artificial intelligence applied in the context of English learning: (1.) Personalized Learning. Artificial Intelligence can personalize the learning experience by analyzing data on individual learners' abilities, learning styles, and preferences. Adaptive systems using Artificial Intelligence can adjust learning materials, difficulty levels, and types of exercises based on learners' progress. (2.) Automatic Evaluation: An AI-based automated evaluation system can be used to assess and provide feedback on written, spoken, or exam assignments. Providing quick and individual feedback helps learners understand their strengths and weaknesses directly. (3.) Chatbots for Speaking Practice. AI-based chatbots can be used for speaking practice and interacting in English. Chatbots can provide interactive dialogue scenarios and provide corrections and suggestions in real-time. (4.) Interactive Listening Comprehension. Speech recognition technology and natural language understanding can be used to develop interactive listening activities. Learners can practice listening to various accents and speaking styles through AI-simulated conversations. (5.) Data Analysis for Learning Enhancement. AI can analyze learning data to identify patterns, trends, and specific needs of learners. By analyzing the data, teachers can provide interventions or additional resources that are appropriate for AI. (6.) AI-Based Mobile Application Development. English-specific mobile applications can leverage AI to provide responsive and accessible learning experiences. AI features in the application can include auto-translators, AI-based exercises, and personal language assistants. (7.) AI Engagement in Learning Forums and Groups. AI chatbots or agents can participate in online learning forums to provide assistance and answer learner questions. AI sentiment analysis can help detect the level of learner satisfaction in the learning community. (8.) Ethics and Security of Using AI. Application of ethical principles in the use of AI, including student data privacy and transparency in AI decision-making. The need for strict security to protect personal information and avoid bias in AI algorithms. (9.) Continuous Evaluation and Improvement. The use of Artificial Intelligence allows for continuous collection of evaluation data to measure the effectiveness of learning. Feedback from learners and data analysis help develop and improve learning programs. The application of artificial intelligence in English learning not only facilitates more efficient teaching but also creates a more dynamic and adaptive learning environment.

CONCLUSION

Based on the results and discussions of this study, it can be concluded that the use of digital technology and artificial intelligence provides great benefits in digital-based English learning at the ECE level. English learning becomes more lively and interesting both at the level of

language skills learning and learning elements or language features. However, the use of digital technology and artificial intelligence in English learning also has challenges, such as issues of accuracy, privacy, and ethics. Therefore, it is recommended that researchers and practitioners pay attention to these challenges in the use of digital technology and artificial intelligence in digital-based English learning. Further research can be done to improve the accuracy of digital technology and artificial intelligence in processing data and recognizing certain patterns, as well as paying attention to aspects of privacy and ethics in the use of digital technology and artificial intelligence in English learning at the ECE level.

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