

e-SUKUKATA TERBUKA BAHASA MELAYU: THE E-LEARNING COURSEWARE FOR 4-YEARS-OLD KINDERGARTEN STUDENTS

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ABSTRACT

The development of e-sukukata signify a significant advancement in early childhood education, especially for teaching "suku kata terbuka" to Bahasa Melayu-speaking children. Designed to support four-year-olds, this innovative courseware enhances language skills and enriches the learning experience through interactive multimedia and an ontology-based approach. The e-sukukata courseware was launched to tackle the challenges children face in mastering "suku kata terbuka," addressing issues like pronunciation difficulties and slow vocabulary growth. By integrating knowledge management, system thinking techniques, and ontology-based methods, the courseware provides a structured learning environment. It includes modules on vowel networking, themed word categories, and interactive quizzes. This thorough approach not only fills educational gaps but also boosts learning through engaging multimedia content, which enhances retention and understanding.

Keywords: *courseware, kindergarten, multimedia, ontology, knowledge management, system thinking*

Introduction

"Courseware" refers to instructional tools, software, and resources designed to help organize and present lessons and learning opportunities. It includes structured material, multimedia elements, assessments, and interactive features, making it essential for promoting effective and efficient learning. Agno and Ponte's (2013) research showed positive results with interactive courseware, allowing students to learn at their own pace, receive instant feedback, and benefit from personalized education.

E-learning has transformed education delivery, offering flexible and engaging learning environments. Multimedia e-learning courseware, particularly for teaching Malay, can significantly improve learning outcomes. This project focused on teaching "suku kata terbuka" (open syllables) to students as young as four, utilizing knowledge management and system thinking through an ontology-based approach. In Malay, "suku kata terbuka" are syllables ending in a vowel sound without a following consonant, contributing to the language's melodic flow. Ahmad and WA (2012) used instrumental phonetic analysis to identify these syllables in Bahasa Melayu.

In e-learning courseware for Bahasa Melayu, especially for learning "suku kata terbuka," effective knowledge management is crucial. By organizing, capturing, storing, and distributing relevant learning materials, teachers can provide comprehensive resources, enhancing the learning process. Petrides and Nodine (2003) emphasize that knowledge management offers a strategic framework for maximizing knowledge use and improving educational outcomes. Using an ontology-based technique, this project categorizes "suku kata terbuka" into vowels and themes, like "Dua" and "Tiga Suku Kata Terbuka," making learning interactive and allowing students to apply these concepts in everyday language. This work aims to develop e-learning courseware focused on "suku kata terbuka" in Bahasa Melayu for 4-year-old students.

In the next section, this paper explores a review of the current practices on e-learning courseware for kindergarten followed by a section containing detailed explanation on the e-Sukukata courseware. Finally, conclusions and recommendations for future research are drawn up in the final section.

Current Practices

The phonic method is the most widely used approach for teaching "suku kata terbuka" in Bahasa Melayu to 4-year-old students, as revealed through interviews with two kindergartens: Tabika Kemas Al-Ikhlas and Tabika Kemas Sri Nakhoda. These interviews uncovered consistent patterns in how teachers use phonics to help students grasp the fundamental concepts of "suku kata terbuka." The current phonic technique emphasizes the relationship between sounds and letters, enabling students to explore syllabic structures in a step-by-step manner. This method aims to enhance phonemic awareness, laying a strong foundation for language development in early childhood education.

Additionally, Tadika Naluri Kreatif Wakaf Beruas emphasizes that learning in kindergartens today is centered around practical experiences. For instance, in culinary classes, students are introduced to labeled items like "gu-la" (sugar), "ga-ram" (salt), and "te-pung" (flour). As students participate in the cooking activity, this indirect exposure aids in vocalization and repeated reading. Afterward, the instructor leads a discussion, reviewing the topic with flashcards and various exercises, such as matching.

Transitioning from the current phonics-based methods to e-learning multimedia courseware for teaching "suku kata terbuka" in Bahasa Melayu to 4-year-old students offers an innovative approach that leverages technology-enhanced education. This shift not only accommodates diverse learning preferences but also introduces a playful element, fostering a positive attitude toward language learning.

With multimedia courseware, students can learn at their own pace and receive instant feedback. This digital-age innovation will enhance the effectiveness of early childhood education by integrating technology into the classroom. Table 1 outlines the current methods used by three kindergartens to teach "suku kata terbuka" in Malay to 4-year-old students.

Table 1: Current Methods Used by Kindergartens

Kindergarten	Learning Method	Descriptions
Tabika Kemas Al-Ikhlas	Phonic Method	<ul style="list-style-type: none"> Utilizes the phonics method, including resources like the "Buku Anakku," to teach kindergarten students about "suku kata terbuka." Students practice pronouncing "suku kata terbuka" and learn to write by connecting dots to form letters using the book.
Tabika Kemas Sri Nakhida	Phonic Method	<ul style="list-style-type: none"> Employs phonics-based methods, such as using books, to teach children to read and spell by linking sounds with letter combinations or individual letters.
Tabika Naluri Kreatif Wakaf Beruas	Hands-on-activities: Flashcards and paper-based activities	<ul style="list-style-type: none"> Utilizes hands-on activities, such as cooking classes, where children are introduced to labeled ingredients. Provides instruction using flashcards and a variety of exercises, including matching activities. Incorporates paper-based exercises that involve tracing words, mimicking, matching syllables, and pasting.

The e-Sukukata Courseware

E-sukukata is a meticulously crafted tool designed to address the specific needs of four-year-old kindergarten students learning "Suku Kata Terbuka" in Bahasa Melayu. By incorporating interactive multimedia elements such as vibrant graphics, engaging games, and audio features, the courseware creates a dynamic and adaptable learning environment. Its intuitive interface encourages exploration and interaction, supporting students in mastering the basics of language and "Suku Kata Terbuka." Additionally, its flexibility allows instructors to tailor lessons to accommodate diverse learning styles while maintaining curriculum standards and educational quality.

The "e-sukukata" courseware homepage serves as the entry point for young learners, as depicted in Figure 1. Its design features a vibrant and inviting color scheme, including blue, yellow, green, white, and red, creating a welcoming environment. The page's appeal is enhanced by a delightful cat and a friendly robot set against a soothing cloud background. Prominent buttons labeled "Pembelajaran" and "Permainan" guide users to their respective areas. Clicking "Pembelajaran" directs users to three main

learning modules, while the "Permainan" button leads to various educational games. The straightforward and engaging design of these buttons is intended to attract the attention of 4-year-old kindergarten students and encourage enthusiastic exploration of the courseware's content.

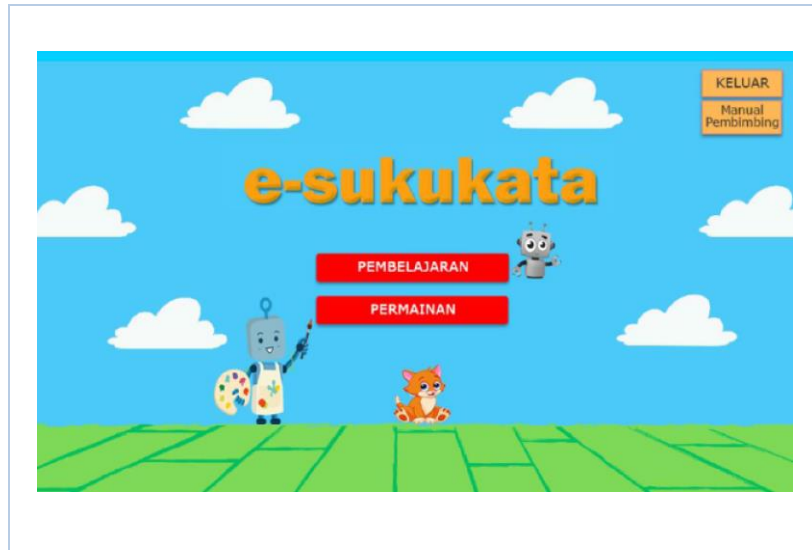


Figure 1: Homepage

The "Pembelajaran" page, an essential part of the e-sukukata courseware, is illustrated in Figure 2. It offers a structured learning path for "Suku Kata Terbuka" in Bahasa Melayu. Upon reaching this page, users encounter three options: "Mari Mengetahui Huruf Vokal," "Mari Mengetahui Suku Kata Terbuka," and "Perkataan Suku Kata Terbuka," each leading to specific instructional sections.



Figure 2: Pembelajaran Page

Clicking "Mari Mengetahui Huruf Vokal" allows users to explore vowel letters, while "Perkataan Suku Kata Terbuka" directs them to a section on words containing "suku kata terbuka." The "Mari Mengetahui Suku Kata Terbuka" button leads to a page dedicated to understanding "suku kata terbuka."

These sections are designed to break down complex language concepts into manageable lessons, making learning more accessible. Additionally, each page features a home button for easy navigation back to the main homepage, ensuring a seamless and user-friendly experience throughout the courseware.

The "Mari Mengenal Huruf Vokal" page, crucial for teaching vowel letters in Bahasa Melayu, is a key component of the e-sukukata courseware, as shown in Figure 3(a). This page features two main buttons: "Huruf Vokal" and "Kuiz." Selecting the "Huruf Vokal" button takes users to a detailed page as shown in Figure 3(b) where they can explore and learn about the five vowel letters—A, E, I, O, and U. Understanding these vowel letters is essential for mastering “suku kata terbuka,” as these syllables end in vowels and are fundamental to language fluency.

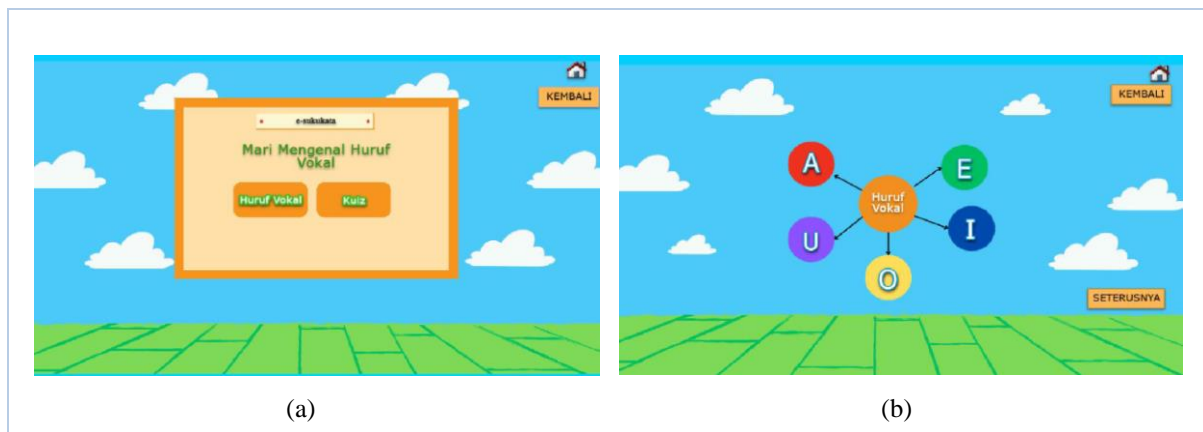


Figure 3: Mari Mengenal Huruf Vokal

On the vowel page, the "seterusnya" button allows users to view examples of words for each vowel, such as "A is for Ayam" as shown in Figure 4(a), which helps contextualize the vowels within meaningful sentences and enhances comprehension. The "Mari Mengenal Huruf Vokal" page focuses on the vowels A, E, I, O, and U, using examples of words that start with these vowels to teach each one. As shown in Figure 4(b), the "Kuiz" button introduces a quiz feature that lets students test their knowledge and receive immediate feedback, making learning both engaging and interactive. Additionally, a home button on the page enables users to easily return to the homepage, ensuring clear and simple navigation even for younger users.

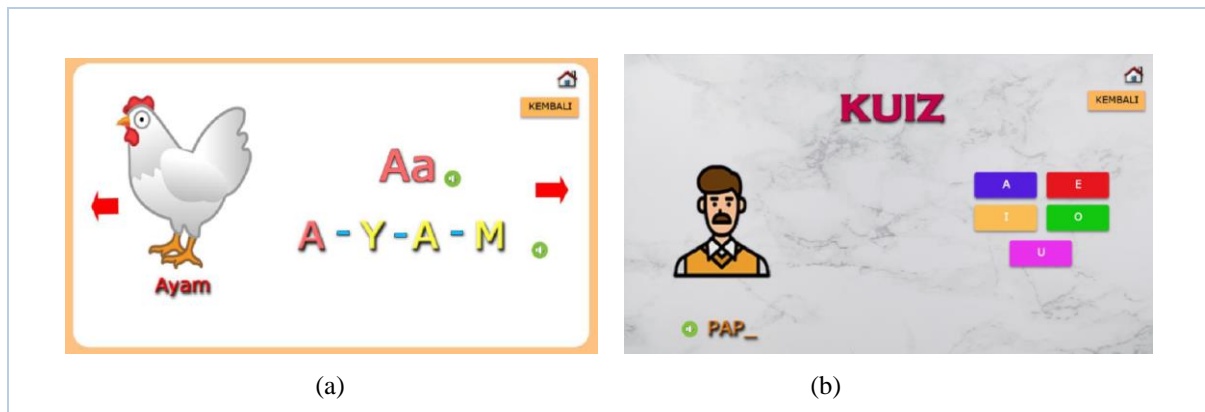


Figure 4: Example for Vowel and Quiz Pages

The "Mari Mengenal Suku Kata Terbuka" page, designed to teach students about "suku kata terbuka" in Bahasa Melayu, is illustrated in Figure 5(a). Clicking the "mainkan" button plays a tutorial video on "dua suku kata terbuka," as shown in Figure Figure 5(b). After watching this video, selecting "seterusnya" will lead users to a tutorial on "dua suku kata terbuka." Following this, users can view vowel-specific examples by clicking "seterusnya" again. This action displays words containing "suku kata terbuka" for each vowel, as depicted in Figure 5(c). This structured approach enhances students' understanding of open syllables by providing clear and logical explanations, deepening their comprehension and reinforcing their knowledge with practical examples.

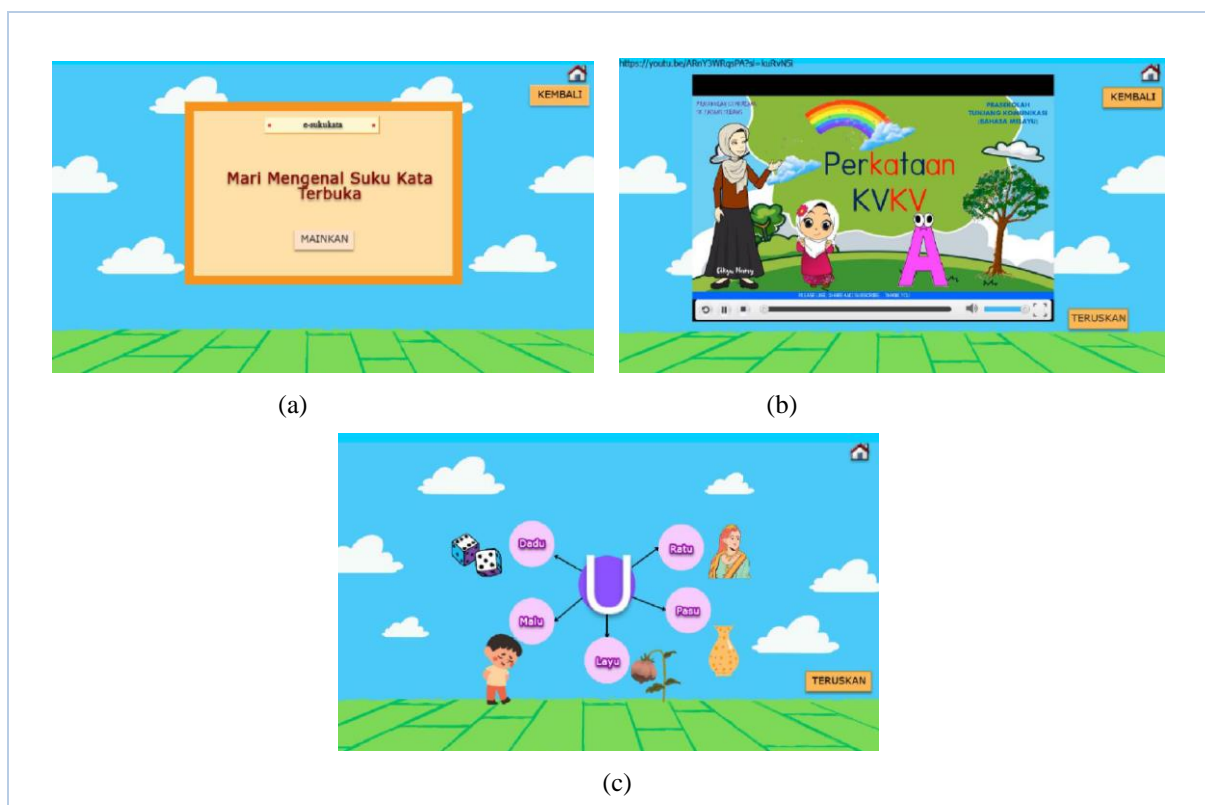


Figure 5: “Mengenal Dua Sukukata Terbuka” Page

The "Perkataan Suku Kata Terbuka" page, as shown in Figure 6(a), provides an in-depth exploration of words composed of "suku kata terbuka." This page features buttons for "Dua Suku Kata Terbuka," "Tiga Suku Kata Terbuka," and "Kuiz," each leading to more specific content. Clicking the "Dua Suku Kata Terbuka" button takes users to a page focused on two-syllable words, offering a range of themes with examples of two-syllable open syllables, as illustrated in Figure 6(b). Similarly, the "Tiga Suku Kata Terbuka" button directs users to a section on three-syllable words, organized by themes and featuring examples of three-syllable open syllables, as shown in Figure 6(c).

The "Kuiz" button provides a quiz that allows users to apply and reinforce their understanding of both two-syllable and three-syllable open syllables, as depicted in Figure 6(d). To ensure easy navigation, the page includes a home button for returning to the main page. This structured approach, featuring interactive assessments and progressive content, supports a comprehensive understanding of "suku kata terbuka" for students.

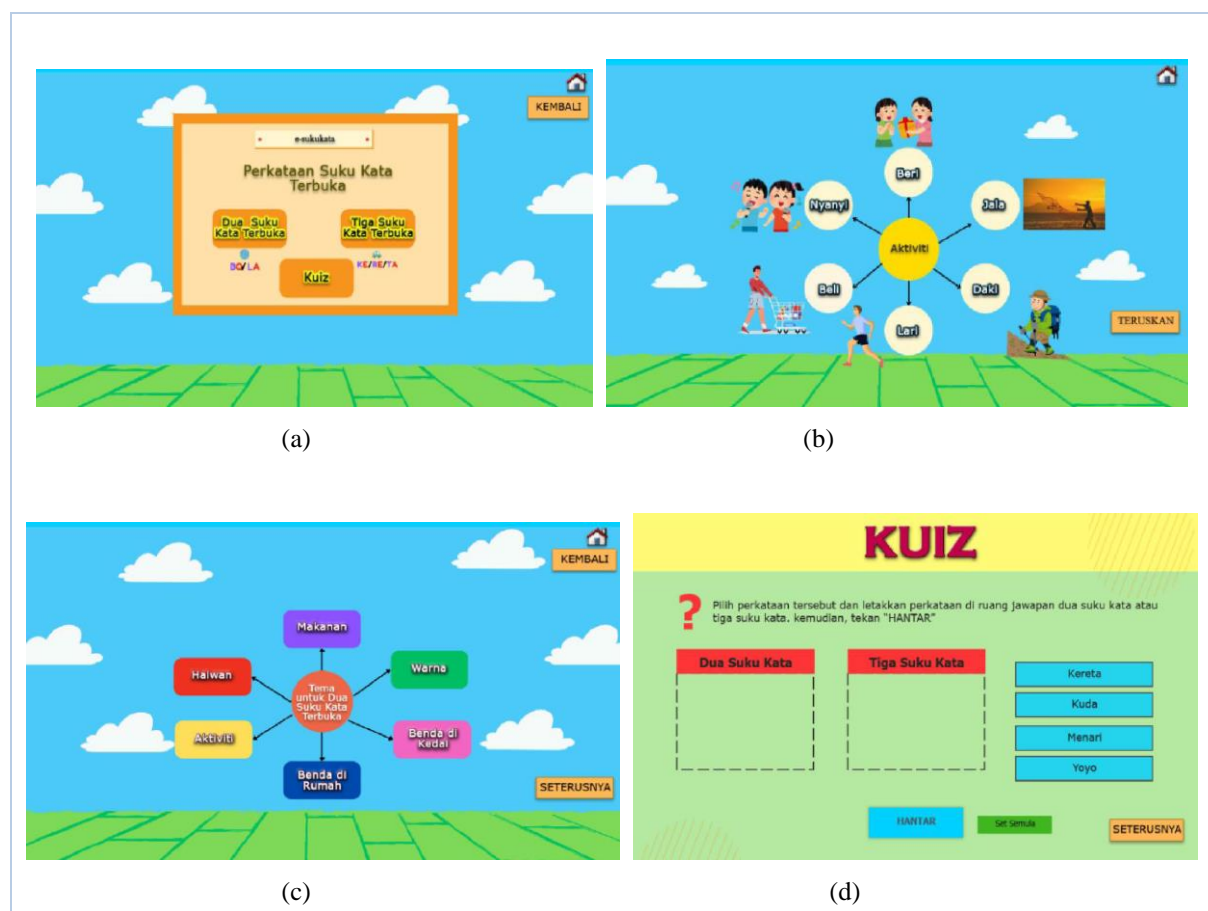


Figure 6: Pages provide an in-depth exploration of words and quizzes

The "Permainan" page, illustrated in Figure 7, offers an interactive and enjoyable way for students to reinforce their learning. This page features three instructional games: "Teka Perkataan," "Susun Suku Kata Terbuka," and "Padankan Suku Kata Terbuka."



Figure 7: The "Permainan" page

The "Padankan Suku Kata Terbuka" game enables students to match syllables and form words, which aids in practicing and reinforcing their grasp of syllable combinations. Similarly, the "Susun Suku Kata Terbuka" game focuses on helping students understand word structure by requiring them to arrange syllables in the correct order. Lastly, the "Teka Perkataan" game boosts vocabulary and comprehension by presenting students with clues that they must use to guess the correct words. Each game offers a unique approach to enhancing students' understanding of language. Each game is designed to reinforce key language skills while providing a fun and engaging experience.

Conclusion

In conclusion, the development and evaluation of e-sukukata represent a significant advancement in early childhood education, particularly for teaching "suku kata terbuka" to Bahasa Melayu-speaking children. This courseware supports four-year-olds in developing their language skills and enhances the learning experience through interactive multimedia and an ontology-based approach. Expert assessments and user feedback confirm its high usability, engagement, and educational impact, validating its effectiveness in achieving educational goals. Future iterations of e-sukukata will focus on continuous improvement based on evaluation insights, further optimizing its role as a valuable tool for early childhood language education and fostering a lifelong love of learning.

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