

 Research Article

The Impact of e-Song and Language Games on Kadazandusun Pupils' Vocabulary Mastery

Minah Sintian¹ , Viannie Tonggurutom¹ , Jesseca Dunis¹ , Ainah Gimir¹ , Nur Qistina Abdul Razak¹ 

¹Fakulti Bahasa dan Komunikasi, Universiti Pendidikan Sultan Idris, Perak, Malaysia

Abstract

Vocabulary knowledge is the foundation for mastering a language. The vocabulary mastery of primary school pupils in rural areas who learn the Kadazandusun language (BKD) as a second or third language can be significantly enhanced through well-planned learning strategies that yield positive pedagogical impacts. This study aims to evaluate the effectiveness of utilizing e-song media and language games to improve BKD vocabulary mastery among primary school pupils. Employing a quasi-experimental design, this study utilized pre- and post-tests to compare treatment and control groups. The teaching interventions were implemented with BKD pupils in schools located in the interior of Sabah. The e-song media was administered to a non-random sample of 30 Year Four pupils from two primary schools: SK Saint Pius Pamilaan, Tenom, and SK Senangang, Keningau. Meanwhile, the language games intervention involved an intact group sample of 20 Year Three pupils at SK Ulu Sapi, Telupid, divided into control and treatment groups based on existing class structures. The control groups were taught using conventional materials, whereas the treatment groups utilized e-songs and language games. Following the intervention, the e-song treatment group's post-test scores increased significantly to a mean score of 80.07, compared with the control group's mean score of 53.47. Similarly, the language games treatment group achieved a post-test mean score of 80, whereas its corresponding control group scored a mean of 29. These results indicate that both digital media and game-based methods significantly improve pupils' vocabulary mastery. Ultimately, this study highlights the value of diversifying authentic learning strategies that can be adapted to various educational contexts, resources, and teacher-led initiatives.

Keywords: E-Songs, Language Games, Kadazandusun Language, Vocabulary, Interior Primary Schools, Quasi-Experiments

✉ Correspondence

Minah Sintian
minahsintian@fbk.upsi.edu.my

Received

February 27, 2026

Accepted

July 9, 2026

Published

August 3, 2026

Citation: Sintian, M., Tonggurutom, V., Dunis, J., Gimir, A., & Abdul Razak, N. Q. (2026). The impact of e-song and language games on Kadazandusun pupils' vocabulary mastery. *Journal of Research in Education and Pedagogy*, 3(3), 537–550.

DOI: [10.70232/jrep.v3i3.203](https://doi.org/10.70232/jrep.v3i3.203)

© 2026 The Author(s).

Published by
Scientia Publica Media



This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial License.

1. INTRODUCTION

Well-planned learning strategies have a positive impact on pupils' academic achievement, especially in vocabulary mastery. Language subjects emphasize vocabulary mastery for speaking, reading, and writing skills. Language skills can be improved through planned learning strategies. Che Hassan and Abd Rahman (2020) emphasize the importance of teachers planning approaches, methods, techniques, and activities to maximize learning impact. The use of modules, books, teaching aids, and current media tools is among the methods applied by educators to ensure that the knowledge conveyed can be understood by students (Osman et al., 2018).

In Malaysia, interest in learning among primary school pupils has gradually declined, resulting in increasingly concerning academic performance. Several studies indicate that one contributing factor to this decline in learning interest is the decision by the Ministry of Education Malaysia (MOE) to abolish the Primary School Achievement Test or *Ujian Penilaian Sekolah Rendah* (UPSR) in 2020 (Ashma & Wan Muna Ruzanna, 2023; Fatimah et al., 2024). Random surveys conducted by social media practitioners revealed that some teachers and parents believe that the abolition of the UPSR has led pupils to become less focused on

their studies and weaker in mastering basic literacy and numeracy skills, namely reading, writing, and arithmetic (3M) (Ismail, 2024; Meja Rencana, 2025). This phenomenon has resulted in learning objectives not being fully achieved and has, in turn, diminished pupils' motivation and contributed to school disengagement (Ashma & Wan Muna Ruzanna, 2023; Fatihah et al., 2024).

The abolition of the UPSR has also disadvantaged pupils in interior areas who take the additional subject of KadaꟇandusun Language (BKD). Pupils who have limited BKD vocabulary, often due to not speaking BKD due to dialect variations (Sintian, 2018; Tongguritom & Sintian, 2025), face more problems with the BKD subject. The lack of engaging and practically applicable learning support materials in contemporary classrooms further constrains pupils' academic achievement, particularly the shortage of learning resources that integrate media and technology (Shanmugam et al., 2023). This is because the use of media or technology in language learning can enhance pupils' engagement and enrich their learning experiences (Saleh et al., 2024).

In addressing current educational challenges, the selection and implementation of teaching and learning strategies must consider the needs of pupils as well as the facilities available in schools. To support holistic pupil development, a combination of varied and engaging learning methods should be applied to stimulate pupils' interest in learning while ensuring a conducive learning environment (Abdul Rahman & Peng, 2024). The use of conventional teaching methods should be reduced in teaching and learning practices in the digital era (Chiew et al., 2019). Therefore, teachers need to introduce innovations and diversify their teaching and learning approaches to sustain pupils' attention and interest in lessons. In this article, the objective of the study is to explain the effectiveness of using e-song media and language games in improving pupils' mastery of BKD vocabulary in primary schools.

1.1. Literature Review

21st Century Education does not focus solely on infrastructure and classroom layout, but also places strong emphasis on the use of instructional media. Media serve as tools for delivering and transmitting messages in the learning process and are essential in an era marked by rapid development in educational activities (Dewi et al., 2021; Kusuma et al., 2023). In this context, media also refer to any materials or equipment brought into the classroom and used by teachers to convey knowledge so that pupils can more easily understand the content being taught. Justine et al. (2019) examined the use of multimedia in BKD instruction by employing the *Sinding Pimato* software to enhance the reading skills of Year 1 BKD pupils. The post-test results revealed a significant difference in reading achievement and pronunciation between the experimental and control groups. This study shares similarities with the present research in its use of songs in teaching and learning. However, their study focused primarily on reading skills, whereas the present study concentrates on pupils' mastery of BKD vocabulary.

The use of songs in language learning has increasingly been recognized as an effective approach to improving language proficiency. This is because songs function as enjoyable learning tools that enhance interest and reduce boredom, particularly among primary school pupils. Husain et al. (2021) noted that the use of songs in foreign language learning does not cause learners to lose interest, as song lyrics can stimulate learners' motivation to learn a foreign language, help reinforce vocabulary, and foster a sense of pride when learners are able to pronounce words correctly. Nevertheless, despite the many benefits of using songs, there are also challenges in applying them within the context of language learning. Muhamad and Rahmat (2020) discussed challenges in using songs in English language learning, particularly in relation to pronunciation. Learners may become confused when listening to songs delivered in varied styles. In addition, learners may struggle to understand the meaning of lyrics when the tempo of a song is too fast or when the lyrics are overly complex. Furthermore, Walker (2024) highlighted challenges in integrating songs into existing curricula due to mismatches between musical styles and individual learning preferences, financial constraints, and teachers' limited preparation in using music according to pupils' needs. Most previous studies have focused on English and Malay. Therefore, there is a clear need for further research on the use of songs in BKD.

In addition to song-based media, the use of language games in learning is also well established in the field of education, particularly at the primary school level. Game-based approaches in language learning create enjoyable and interactive learning environments and activities, while providing pupils with opportunities to participate actively in learning and encouraging language use in a relaxed setting. Language

games play an important role in reinforcing language learning, especially in aspects such as vocabulary, grammar, pronunciation, and word meaning. Numerous previous studies have been conducted to demonstrate the effects and importance of language games in enhancing language proficiency, particularly in relation to vocabulary acquisition. Bulan and Idhar (2021) conducted a study on the effectiveness of Noun Word Domino Cards (NWDC), a card-based game designed for learning nouns in English. The study aimed to improve English vocabulary among lower secondary school pupils in Indonesia. The findings showed that the average score of the 18 pupils who participated in learning through NWDC was high, with a mean score of 79 in the administered test, thereby confirming the effectiveness of NWDC in vocabulary learning. This study also emphasized the importance of teaching and mastering nouns in vocabulary development and supports the use of games in language learning.

In a quasi-experimental study, Li (2021) investigated vocabulary learning among Chinese learners of English as a Foreign Language (EFL) and found that game-based learning using *Baichizhan* within a game-based learning application helped to improve pupils' vocabulary achievement. The results indicated that the use of this game application significantly enhanced vocabulary performance among pupils in the treatment group compared with those in the control group, who were taught using traditional methods. In addition, the study revealed that pupils' levels of motivation and self-confidence in learning concrete common nouns increased through the implementation of game-based activities. These findings demonstrate that the use of digital games as a learning approach is more effective in improving vocabulary mastery among EFL learners while also providing a more enjoyable learning experience.

Research on vocabulary learning through games has also been conducted by Fauziddin and Fikriya (2020), through an action research study on the use of *Hijaiyah* letter card games in Arabic vocabulary learning. The study involved 18 children aged between five and six years. The findings revealed a significant increase in participants' vocabulary achievement, with performance improving from 33% at the initial stage to 56% in the first cycle, and further increasing to 78% in the second cycle. In addition to improving vocabulary achievement, the study found that the *Hijaiyah* letter card games fostered curiosity and interest in learning among the participants, thereby making learning activities more enjoyable. This study supports the view that the use of age-appropriate learning materials, such as games, can facilitate effective vocabulary learning.

Language games based on visual materials, such as pictures, have also been found to be effective in enhancing pupils' vocabulary mastery. This claim is supported by the findings of Muwafi and Taufiqurrochman (2023), who examined the effectiveness of an Android-based picture-guessing game in improving Arabic vocabulary among learners studying the language as a foreign language in Indonesia. The results indicated that visually oriented games helped pupils understand and retain words more easily. A significant difference in vocabulary mastery was observed in post-test results between the treatment group and the control group. Furthermore, the study supports the use of concrete teaching aids integrated with technology as a means of stimulating pupils' memory, thereby making vocabulary learning more effective, particularly in foreign language learning contexts.

Barros et al. (2022) also conducted a study on the effectiveness of teaching English nouns through the use of BINGO games. The study involved 20 students at the *Eskola de Hospitalidade e Turismo Becora Dili* and found a significant difference in participants' test scores before and after the implementation of the game. The study suggested that BINGO games should be utilized in the teaching of English nouns. Similarly, Raajikumar and Aziz (2024) found that the use of BINGO games among Year 2 pupils in a Tamil National-Type School or *Sekolah Kebangsaan Jenis (Tamil)* (SJKT) in the state of Pahang enhanced pupils' English vocabulary mastery. All study samples demonstrated improved performance in post-tests compared with pre-tests. Observations indicated an increased ability among pupils to associate meanings and images with the correct vocabulary. Therefore, games such as BINGO are highly suitable as an approach to vocabulary instruction at the primary school level, particularly for pupils who require visual stimulation and enjoyable learning experiences. In addition, English vocabulary mastery can also be enhanced through conventional strategies, such as the implementation of "Words of the Day" interventions, which expose pupils to new words daily by integrating meaning, pronunciation, and practical application (Caupayan & Revelo, 2025). These activities are conducted through interactive group discussions, alongside systematic monitoring of pupil engagement and the use of both formative and summative assessments.

Based on the literature reviewed, it is evident that numerous previous studies have examined the widespread use of language games in language learning, particularly in enhancing vocabulary mastery in English language subjects and several other languages across various levels of education. The researcher also found that earlier studies involved the use of games comprising various interactive activities, including picture card games, crossword puzzles, and word-matching tasks, which have had a positive impact on vocabulary learning. These impacts include improvements in long-term memory, understanding of meaning, spelling skills, and the appropriate use of words. From an examination of previous studies, the researcher identified several research gaps that warrant further attention, particularly in relation to the languages under investigation. Most existing studies have focused on dominant languages such as English, while research on the teaching and learning of indigenous languages remains limited and underexplored. This is especially the case for studies on language games within the context of mother tongue education involving ethnic languages such as BKD. Therefore, the researcher contends that further studies are necessary to evaluate the effectiveness of various teaching strategies in improving pupils' vocabulary while simultaneously fostering an enjoyable learning environment. This study is also expected to contribute to the development of a range of contextualized teaching and learning materials that are appropriate for the context of Kadazandusun language learning.

2. METHODOLOGY

2.1. Research Design

This quantitative study employed a quasi-experimental design involving pre-tests and post-tests for both treatment and control groups. Abdull Sukor (2022) views the quasi-experimental method as an intervention approach that enables the evaluation of the effectiveness of a desired research treatment on a selected sample. Teaching approaches using e-song and language games were implemented with different samples and at different locations. The pre-tests and post-tests have the same total number and content of items. The justification is to identify differences in achievement before and after the implementation of e-songs and language games.

2.2. Participants

In this study, there are two categories of study samples, namely samples for e-song and samples for language games. The e-song intervention involved 30 Year Four pupils who were selected through non-random sampling from two rural primary schools in the state of Sabah, namely SK Saint Pius Pamilaan, Tenom, and SK Senangang, Keningau. The selection of these two schools was justified by their demographic characteristics, as both schools offer the BKD subject and have at least 15 pupils in a single class, thus allowing the quasi-experimental procedure to be conducted smoothly, enjoyably, and to yield more meaningful findings. For the language games component, the study sample consisted of 20 Year Three pupils who were taking the BKD subject at SK Ulu Sapi, Telupid, another rural school in Sabah. The sample comprised pupils who were non-native speakers of the *Bunduliwan* dialect, which is used as the standard variety in BKD. The sampling method employed was intact group sampling, based on existing class divisions determined by the school.

2.3. Research Instruments

There were two main instruments used in this study, namely the pretest and post-test question sets. In addition, a set of e-songs, memory card games, BINGO, and crossword puzzles was also provided specifically for the treatment group. The construction of test items was based on the Curriculum and Assessment Standard Document or *Dokumen Standard Kurikulum dan Penilaian* (DSKP), the Year Three and Year Four BKD textbooks, aligned with the subtopics that had been covered by the pupils. The pre-test and post-test question sets were designed at appropriate levels of difficulty for the pupils, namely easy, moderate, and difficult. The test instruments used in this study were adapted from exercises involving various word classes in the Year Three Kadazandusun Language Activity Book (Gustin et al., 2021).

2.4. Procedures

Before the pre-test was conducted, both groups were given an explanation of the purpose of this study. The consent of the parents of the study participants was also obtained. The researcher also requested permission from the school to conduct this experiment to prevent unwanted things from happening. Both groups sat the pre-test at the beginning of the study. Marks were recorded in the form provided. Year Four pupils from SK Saint Pius Pamilaan, Tenom, were assigned to the treatment group, while Year Four pupils from SK Senangang, Keningau, served as the control group. The intervention was conducted for eleven weeks for both groups according to the class schedule set by the school, which was 1 hour and 30 minutes per school week. To examine the effects of the treatment intervention, e-song media were applied to the treatment group, whereas the control group used conventional materials such as textbooks, real objects, and topic-appropriate videos, excluding e-song media. Each song highlighted specific word classes, such as verbs, nouns, and adjectives, intending to enrich pupils' vocabulary. There are two main types of instruments in this study, namely pre-test and post-test question sets and e-song media. Item construction is based on the Curriculum and Assessment Standard Document (DSKP) and the Fourth Year BKD textbook, based on the subtopics that have been studied by the students. This pre-test and post-test question set has a level that is appropriate for the students, namely easy, medium, and difficult levels. Students have 30 minutes to answer the test questions. This pre-test and post-test question set contains objective and subjective questions, divided into three sections: A, B, and C, each with five questions. The question instructions are to circle the appropriate vocabulary in simple sentences, construct simple sentences based on the vocabulary learned, and list the nouns found in the text excerpt.

The pupils involved in the language games from Year Three in SK Ulu Sapi were also divided into two groups according to their classes, with 10 pupils in the control group and 10 pupils in the treatment group. The intervention was conducted for twelve weeks for both groups. The control group used traditional methods such as textbooks, real objects, and worksheets, while the treatment group used several sets of language games, including memory card games, BINGO, and crossword puzzles designed around spelling and writing activities. These games required pupils to demonstrate mastery of spelling for concrete common nouns associated with the images presented in the games. Learning concrete common nouns using memory card games was implemented three times for the treatment group. Both groups sat for a post-test two weeks after the implementation of the learning session using the memory card game. This pre-test and post-test question set contains six parts, namely Part A: Arrange letters to form the correct object name based on the picture, Part B: Label the picture with the correct object name, Part C: Choose the correct answer to complete the sentence, Part D: Complete the paragraph with the correct concrete common noun, Part E: Complete the interrogative sentence based on the picture and Part F: Copy the sentence based on the correct picture. Parts A, B, C, and D each have a mark allocation of 10 marks, while Parts E and F each have a mark allocation of 5 marks.

2.5. Data Analysis

Quantitative data were collected from the pre-test and post-test. The data were analyzed and presented in descriptive form to obtain percentages and mean scores. To analyze data based on grades and percentage scores, the researcher followed the guidelines from the Ministry of Education Malaysia, as shown in Table 1.

Table 1. Academic Session Final Exam Percentage Range and Grades (UASA)

Grade	Mark (%)	Achievement Level
A	82-100	Excellent
B	66-81	Distinction
C	50-65	Good
D	35-49	Satisfactory
E	20-34	Achieve a minimum level
F	0-19	Not achieve a minimum level

Source. Ministry of Education Malaysia (KPM, 2024)

3. FINDINGS

3.1. Pupil Demographics

Student demographics are presented in Table 2.

Table 2. Pupil Demographics

School Location	Ethnic	Year	Age	Gender		N
				Male	Female	
SK. St. Pius Pamilaan	Dusun	4	10	5	10	15
SK. Senangang	Dusun	4	10	8	7	15
SK. Ulu Sapi	Kadazan Labuk & Sungai	3	9	12	8	20

3.2. Use of e-Songs in BKD Vocabulary Learning

The song lyrics used in the BKD vocabulary learning are presented in Figure 1.

Song Lyrics

Theme : *Winoun Susuyan* (Nature Story)

Title: *Tomu Totuong Keningau* (Keningau Night Market)

(Examining Nouns)

Mongoi oku **Keningau**
sumakai **Proton Saga**
duo di mamai **Basin**
kawaya bawang **Pagalan**

Tomu totuong Keningau
ogumu **kinotuan**
baro o **lomiding**
baro nogi **langgangon**

Tomu totuong Keningau
baro nogi **ko'ua'an**
baro o **rangalau**
baro o **tintingabai**

Figure 1. Song Lyrics *Tomu Totuong Keningau* (Keningau Night Market)

This song was specifically designed to assist pupils in mastering vocabulary related to the word class of nouns. The lyrics of the song are displayed on the video recording to make it easier for students to say the words while singing, as in Figure 2. After singing the song, the teacher will instruct the students to hold up the noun card as in the song lyrics. The e-song media can be fully accessed by scanning a Quick Response (QR) code, enabling pupils to learn nouns through songs flexibly and conveniently.





Figure 2. The Pictures and Lyrics in Keningau Night Market e-Song

Tables 3 and 4 present the results of scores, mean scores, and standard deviations for the pre-test and post-test of both the control and treatment groups.

Table 3. Scores, Mean Scores, and Standard Deviations of Pre-Test and Post-Test of the Control Group

Pupils	Pre-Test Score (%)	Grade	Post-Test Score (%)	Grade
MK001	20	E	50	C
MK002	23	E	56	C
MK003	23	E	66	B
MK004	20	E	50	C
MK005	23	E	40	D
MK006	23	E	60	C
MK007	33	E	45	D
MK008	27	E	42	D
MK009	33	E	45	D
MK0010	27	E	40	D
MK0011	20	E	65	C
MK0012	27	E	40	D
MK0013	53	C	75	B
MK0014	27	E	58	C
MK0015	30	E	70	B
Mean	27.27		53.47	
Std. Deviations	8.31		11.77	

Based on Table 3, the scores of pupils MK001 and MK002 demonstrated notable improvements in BKD vocabulary mastery from the pre-test to the post-test. MK001 improved from a score of 20% (Grade E) to 50% (Grade C), while MK002 increased from 23% (Grade E) to 56% (Grade C). Overall, the analysis indicates an improvement in pupils' performance from the pre-test to the post-test, with the mean score increasing by 26.2 points, from 27.27 to 53.47. This improvement suggests that the intervention implemented, namely the instructional approach employed, was effective in enhancing pupils' vocabulary mastery. However, the increase in standard deviation from 8.31 to 11.77 indicates greater variation in pupils' performance after the intervention. This suggests that while some pupils showed substantial improvement, a larger number of pupils demonstrated more limited gains in vocabulary mastery.

Table 4 shows that MR001 and MR002 recorded substantial increases in post-test scores following the use of e-song media. MR001, who achieved a pre-test score of 43% (Grade D), improved to 80% (Grade B), representing an increase of 37%. MR002, with a pre-test score of 20% (Grade E), achieved 78%

(Grade B), reflecting an increase of 58%. These significant improvements in post-test scores indicate that e-song media can enhance pupils' understanding and mastery of vocabulary.

Table 4. Scores, Mean Scores, and Standard Deviations of Pre-Test and Post-Test of Treatment Groups

Pupils	Pre-Test Score (%)	Grade	Post-Test Score (%)	Grade
MR001	43	D	80	B
MR002	20	E	78	B
MR003	43	D	83	A
MR004	43	D	92	A
MR005	43	D	100	A
MR006	43	D	87	A
MR007	47	D	80	B
MR008	23	E	70	B
MR009	33	E	90	A
MR0010	37	D	65	C
MR0011	47	D	80	B
MR0012	43	D	93	A
MR0013	30	E	65	C
MR0014	43	D	75	B
MR0015	20	E	63	C
Mean	37.2		80.07	
Std. Deviations	9.601		11.145	

3.3. Use of Language Games in BKD Vocabulary Learning

Language games, including memory cards, BINGO, and crossword puzzles, were applied in the learning of BKD nouns to enhance pupils' vocabulary mastery. Examples of the language game modules used are as follows:

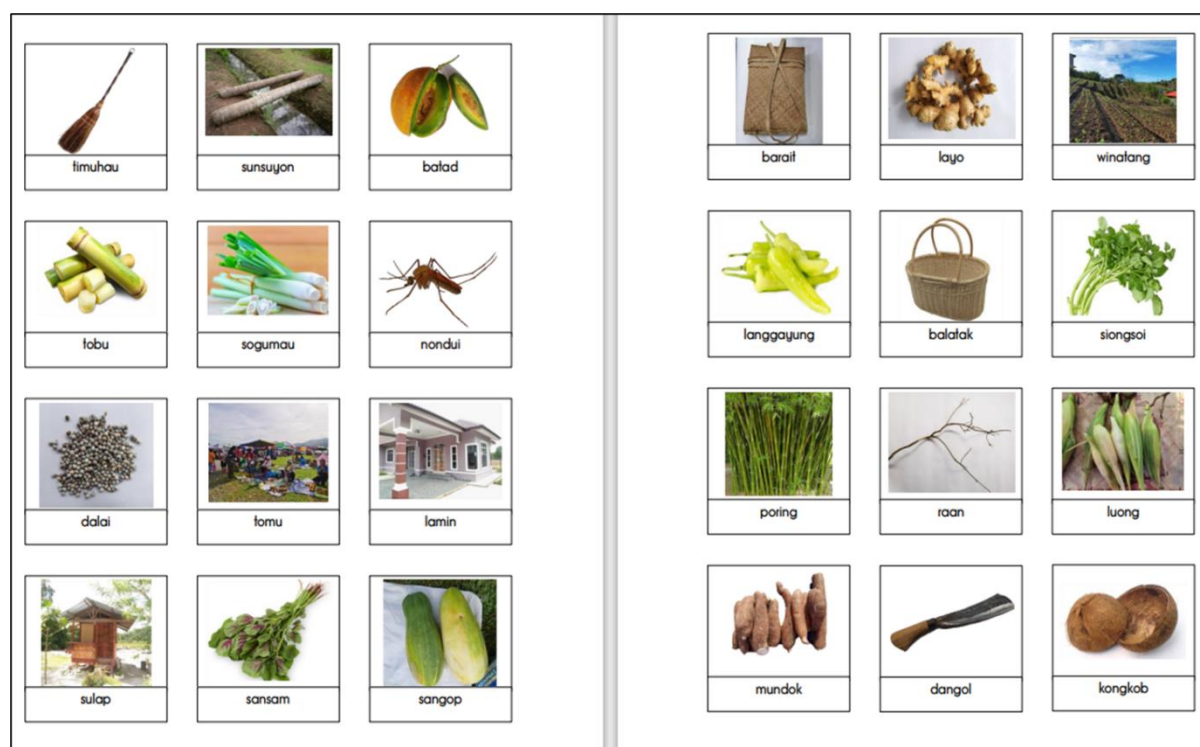


Figure 3. Memory Cards

<i>dangol</i>	<i>gogorib</i>	<i>kolibambang</i>	<i>langgayung</i>	<i>rain</i>
<i>tusak</i>	<i>lamin</i>	<i>tadan</i>	<i>layo</i>	<i>siongsoi</i>
<i>sulap</i>	<i>tapol</i>	<i>rilabu</i>	<i>batad</i>	<i>lansat</i>
<i>gamut</i>	<i>sangop</i>	<i>tagu</i>	<i>sogumanu</i>	<i>barait</i>
<i>mundok</i>	<i>basung</i>	<i>balatak</i>	<i>luong</i>	<i>kongkob</i>

Figure 4. Printed Paper with 5X5 Grid for BINGO Games
POMOINAN BOROS MISULAK (CROSSWORD PUZZLE)

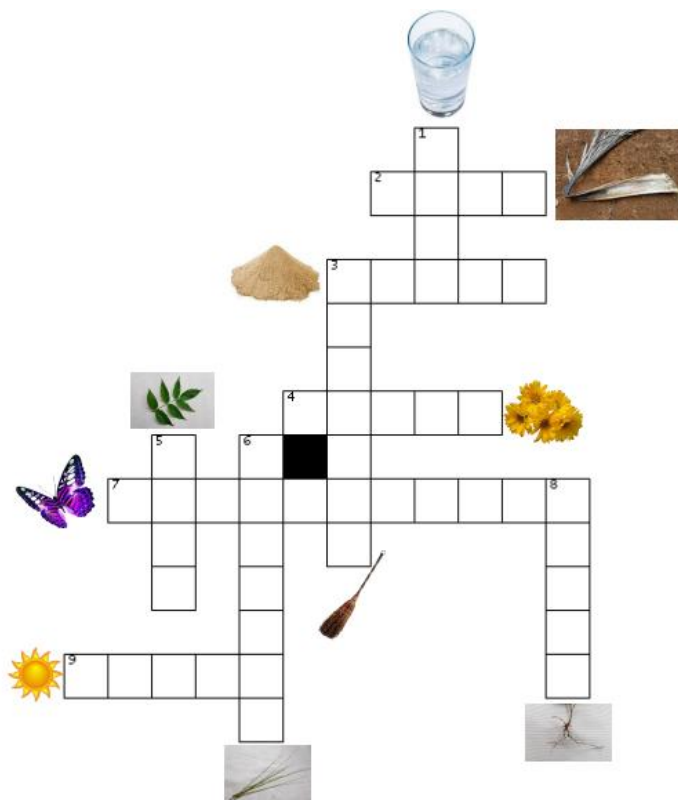


Figure 5. Crossword Puzzle

Table 5 presents the results of scores and mean scores for the pre-test and post-test of both the control and treatment groups.

Table 5. Scores and Mean Scores of the Pre-Test of Both the Control and Treatment Groups

Treatment Group	Pre-Test Score (%)	Control Group	Pre-Test Score (%)
R1	42	K1	22
R2	24	K2	20
R3	24	K3	24
R4	42	K4	16
R5	32	K5	16
R6	14	K6	42
R7	26	K7	32
R8	28	K8	42
R9	20	K9	22
R10	26	K10	30
Mean	27.8	Mean	28.6

Table 5 presents the pre-test scores (in percentages) of the study participants from both the treatment and control groups. The mean score for the treatment group was 27.80, while the mean score for the control group was 28.60. The mean score of the control group was slightly higher than that of the treatment group by a difference of 0.8. Based on the interpretation of mean score values adopted in this study, the level of mastery of concrete common nouns for both groups was categorized as weak, with mean percentage scores ranging between 20 and 40. Meanwhile, Figure 6 compares achievement scores on a pre-test and three post-tests for treatment and control groups using language games.

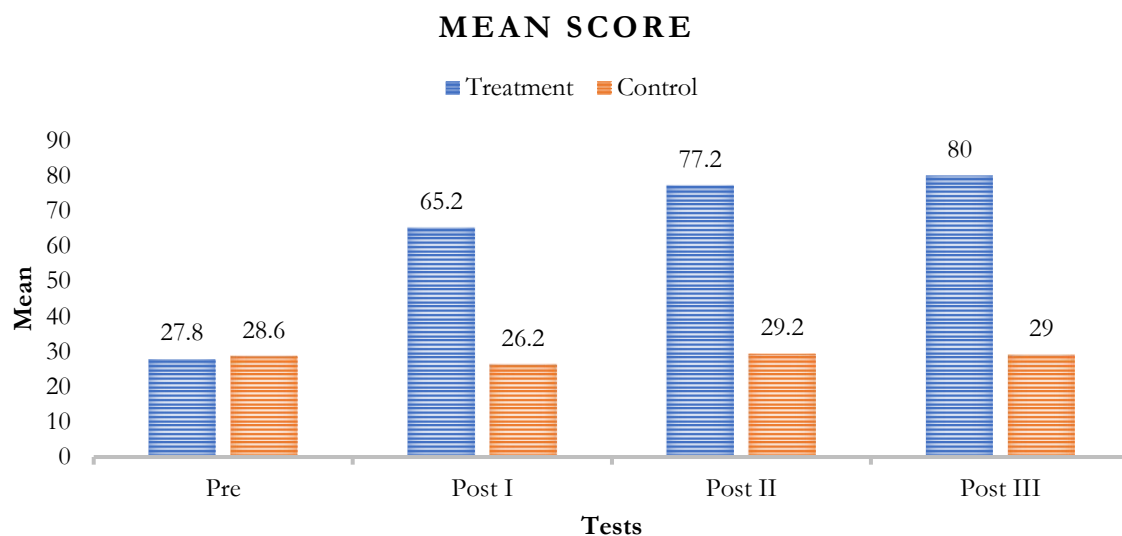


Figure 6. Achievement Scores of Treatment and Control Groups

Figure 6 illustrates a comparison of the mean achievement scores between the treatment and control groups across the tests conducted. The pre-test mean scores for both groups were nearly identical, with the treatment group recording a mean score of 27.80 and the control group recording 28.60. This indicates that both groups were at a comparable level before the implementation of language games in the treatment group. However, the treatment group demonstrated a substantial increase in mean scores following the application of language games in BKD noun learning. At the Post-Test I stage, the difference in mean scores between the two groups was 38.6, with the treatment group achieving a mean score of 65.20, while the control group remained at a low mean score of 26.20. In Post-Test II, the difference in mean scores between the treatment and control groups increased to 48.6, with the treatment group continuing to improve, recording a mean score of 77.20 compared with 29.20 for the control group. The Post-Test III mean scores showed a difference of 51 points between the two groups, with the treatment group achieving a mean score of 80, while the control group recorded a mean score of only 29.

Based on Figure 6, a significant difference can be observed in the mean scores of both groups from the pre-test to the post-test stages. This difference indicates that the application of language games had a sustained positive effect on the performance of the treatment group. In contrast, the control group, which underwent conventional learning activities without the use of language games, did not demonstrate significant improvement throughout the study period. This comparison indicates that the use of language game instruments in learning effectively enhanced the academic performance of pupils in the treatment group in mastering BKD common nouns.

4. DISCUSSION

The overall analysis indicates that the use of e-song media and language games had a significant positive impact on the achievement of the BKD vocabulary among rural primary school pupils between the pre-test and post-test. The application of song lyrics that align with the lesson topics and the pupils' age group serves to stimulate interest (Rosli et al., 2022). Furthermore, the vocabulary employed in the creation of these e-song lyrics consists of words used in the daily life of the Kadazandusun community, which enables pupils to appreciate and understand their meanings more easily. Additionally, songs assist children in expressing feelings and articulating ideas regarding themselves and their surroundings (Kamaruddin, 2024). Explicitly, the use of songs embedded with local cultural contexts not only enriches vocabulary but also fosters pupils' appreciation and attachment to their native language. However, there are fundamental constraints in the implementation of both media. One of the primary challenges is the absence of research samples in both the treatment and control groups. This limitation has resulted in certain topics and learning activities being inaccessible to the pupils. Consequently, it has had a direct impact on the data collection process. Furthermore, the small sample size restricts the generalisability of the findings to a broader context.

Learning through language games also exerts a positive impact on pupils' vocabulary mastery, particularly regarding nouns. Language games reinforce a pupil's memory of a specific word, which they subsequently retrieve during their daily learning activities. Wright et al. (2006) contend that pupils are more inclined to remember and retrieve words learned while engaging in games that require interaction with others. Language games provide a learning environment that is interactive, contextual, and enjoyable. In the context of vocabulary acquisition, effective word retrieval occurs when pupils successfully recognize a word visually, as well as pronounce, write, and actively apply it in other tasks. Within this study, the findings demonstrate an improvement in the achievement of the treatment group, evidenced by a gradual increase in mean scores from the pre-test through to the Post-Test III stage. This improvement supports the notion that the use of language games plays a vital role in helping pupils achieve a higher proficiency in recognizing and recalling learned BKD nouns.

The e-song media and language games not only influence the pupils' vocabulary achievement but also yield positive effects for teachers. The media developed by the researcher assist teachers in overcoming the shortage of teaching aids, enhancing their digital media and technology skills, and increasing instructional creativity. Furthermore, it broadens the teachers' experience in exploring authentic resources within their environment to be utilized as teaching materials. Nevertheless, teachers intending to use any form of media in teaching and learning must ensure it is grounded in the Curriculum Document, in addition to referring to textbooks and other appropriate and relevant sources.

5. CONCLUSION

The implementation of e-song media and language games in the teaching of the Kadazandusun language in primary schools has had a positive impact on the improvement of pupils' vocabulary achievement. Data indicate that the percentage of achievement in the treatment group following the post-test increased in comparison to the control group. This reinforces the proposition that multimedia-based interventions, specifically those incorporating songs and language games, are capable of stimulating pupil interest and motivation within the context of language learning. The integration of e-song media and language games not only possesses the potential to enrich the vocabulary range of primary school pupils but also strengthens pedagogical practices that are responsive to the needs of those undertaking the BKD subject. This aligns with the objectives of enhancing bilingual literacy and preserving cultural heritage through learning approaches that are more interactive and contextual.

The use of e-song media and language games also yields positive impacts on teachers. The media developed by the researcher assists teachers in addressing the shortage of instructional resources, enhancing their technological and digital media competencies in teaching, fostering greater creativity in instructional practices, and broadening their experience in exploring authentic resources within their surroundings for pedagogical use. Nevertheless, teachers who intend to use any form of media in teaching and learning should align their practices with the Standard Curriculum documents, refer to textbooks and other relevant sources to support pupils' vocabulary acquisition, and be guided by appropriate teaching and learning models. This includes identifying learning objectives, considering pupils' prior knowledge, selecting suitable instructional strategies, and reflecting on their own knowledge and skills in delivering the learning content.

Among the recommendations for future improvement of this study is the expansion of the sample size to ensure that the findings are more representative of the actual population. Conventional forms of language games should also be replaced or complemented with digital technological formats to enhance engagement, in line with contemporary educational transformations. The development of digital learning materials is highly appropriate, as they are easily accessible and more cost- and time-efficient in terms of preparation. However, the need for printed learning materials should also be considered, as there are still schools in rural or remote areas that lack stable internet access or sufficient digital devices to support digital learning activities. Therefore, the provision of materials in both formats would cater to the diverse contexts of schools while ensuring equitable learning opportunities for all students in the implementation of language game-based learning activities.

Acknowledgments. Appreciation to all pupils and teachers at the school involved in the study. Thanks also to the manuscript reviewers and the editors who published this article.

Research Ethics. Considering research ethics, the authors affirm that this research was conducted with integrity and in adherence to ethical standards. In the implementation of this quasi-experimental study, the researcher has adhered to the concept of voluntarism, i.e., not creating any element of coercion against the students who have been determined. Researchers also do not lie to participants to attract interest to cooperate with the ongoing study, and do not falsify or conceal data obtained from the study sample.

Data Availability. All data can be obtained from the corresponding author.

Conflict of Interest. The authors declare no conflict of interest.

Funding. This research received no external funding.

REFERENCES

- Abdul Rahman, N. H. S., & Peng, F. A. (2024). Penggunaan permainan bahasa dalam pengajaran pengenalan karakter Cina sekolah kebangsaan dalam kalangan murid tahun 1 [The effect of Chinese character literacy teaching under language games teaching approach for Chinese language subject in national school]. *Muallim Journal of Social Science and Humanities*, 8(3), 94-111. <https://doi.org/10.33306/mjssh/288>
- Abdull Sukor, S. (2022). *Kaedah penyelidikan pendidikan kuantitatif*. Universiti Utara Malaysia.
- Ashma, S., & Wan Muna Ruzanna, W. M. (2023). Pemansuhan UPSR: Kesian guru Bahasa Melayu tahun enam dalam melaksanakan pentaksiran bilik darjah. *Jurnal Dunia Pendidikan*, 5(1), 181-191.
- Barros, I., Sarmento, J., Gutierrez, C., Belo, F., & Goncalves, A. (2022). Using BINGO to teach English plural nouns. *Journal of Innovative Studies on Character and Education*, 6(2), 312-326. <https://iscjournal.com/index.php/isce/article/view/167>
- Bulan, A., & Idhar, I. (2021). Developing Noun Words Domino Card (NWDC) learning media to improve English vocabulary mastery of junior high school students. *Voices of English Language Education Society*, 5(2), 192-205. <https://doi.org/10.29408/veles.v5i2.4028>
- Caupayan, G. & Revelo, J. S. (2025). Utilizing the 'Words of the Day' strategy to enhance students' vocabulary skills. *Journal of Research in Education and Pedagogy*, 2(2), 150-154. <https://doi.org/10.70232/jrep.v2i2.33>
- Che Hassan, C. Z., & Abd Rahman, F. (2011). The implementation of teaching and learning in writing skills at the primary school. *Malay Language Education Journal*, 1(1), 67-87. <https://spaj.ukm.my/jpbm/index.php/jpbm/article/view/23>

- Chiew, A. H. L., Zainol Abidin, M. J., & Saibon, J. (2019). Learners' perceptions of the impact of using digital storytelling on vocabulary learning. *Teaching English with Technology*, 19(4), 3-26. <https://files.eric.ed.gov/fulltext/EJ1233478.pdf>
- Dewi, I. P., Sofya, R., & Huda, A. (2021). *Membuat media pembelajaran inovatif dengan aplikasi Articulate Storyline 3*. UNP Press.
- Fatihah, S. N., Hisham, B. B. N., Sivalingam, L. O., Pailin, D. G., Hashim, F. N., & Mustapha, M. (2024). Konflik dan penyelesaian dalam menjaga kualiti pendidikan pelajar selepas pemansuhan UPSR dan peningkatan tahap silibus. *Jurnal Psikologi dan Kesihatan Sosial*, 8(1), 109–118. <https://jurcon.ums.edu.my/ojums/index.php/JPKS/article/view/5814>
- Fauziddin, M., & Fikriya, M. (2020). Mengenal kosa kata bahasa Arab melalui permainan kartu huruf hijaiyah yang dilengkapi kosa kata. *Journal for Education Research*, 1(1), 46-54. <https://jer.or.id/index.php/jer/article/view/6/5>
- Gustin, C., Jolius, P., & Sampai, R. (2018). *Bahasa Kadažandusun tahun 3 buku teks*. Dewan Bahasa dan Pustaka.
- Husain, S., Jusoh, Z., Mustapha, N. F., Mohd Jalis, F. M., & Sim, N. B. (2021). Student motivation to learn foreign languages through song in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 11(12), 1831–1840. <https://dx.doi.org/10.6007/IJARBS/v11-i12/11321>
- Ismail, M. K. (2024, Nov 28). *Hapus UPSR, PT3 burukkan lagi masalah 3M dalam kalangan pelajar*. MalaysiaGazette. <https://malaysiagazette.com/2024/11/28/hapus-upsr-pt3-burukkan-lagi-masalah-3m-dalam-kalangan-pelajar-gpms/>
- Justine, M., Taisin, N., & Kiting, R. (2019). Efficiency of learning software 'Sinding Pimato' towards reading achievement of Kadažandusun language for year one pupils. *The International Journal of Social Sciences and Humanities Invention*, 6(3), 5365-5369. <https://doi.org/10.18535/ijsshi/v6i3.04>
- Kamaruddin, N. J. (2024). The importance of folk songs in preschool education. *Jurnal Pendidikan Bitara*, 17, 157–165. <https://doi.org/10.37134/bitara.vol17.sp2.16.2024>
- Kusuma, J. W., Supardi, Akbar, M.R., Hamidah, Ratnah, Fitrah, M., & Sepriano. (2023). *Dimensi media pembelajaran: Teori dan penerapan media pembelajaran pada era revolusi industri 4.0 menuju era society 5.0*. Sonpedia Publishing Indonesia.
- Li, R. (2021). Does game-based vocabulary learning app influence Chinese EFL learners' vocabulary achievement, motivation and self-confidence? *SAGE Open*, 1-12. <https://doi.org/10.1177/21582440211003092>
- Meja Rencana. (2025, April 17). *Guru sekolah menengah berdepan cabaran pemansuhan UPSR*. Utusan Malaysia. <https://www.utusan.com.my/rencana/forum/2025/04/guru-sekolah-menengah-berdepan-cabaran-pemansuhan-upsr/>
- Ministry of Education Malaysia [KPM] (2024). *Pelaksanaan ujian akhir sesi akademik 2024/2025*. <https://www.moe.gov.my/index.php/en>
- Muhamad, N., & Rahmat, N. (2020). Investigating challenges for learning English through songs. *European Journal of English Language Teaching*, 6(1), 1-15. <http://dx.doi.org/10.46827/ejel.v6i1.3270>
- Muwafi, M. R., & Taufiqurrochman, R. (2023). Efektivitas penggunaan permainan tebak gambar berbasis android dalam meningkatkan kosa kata bahasa Arab [The effectiveness of using android-based picture guessing game in improving Arabic vocabulary]. *Journal of Interdisciplinary Arabic Learning*, 1(1), 12-21. <https://doi.org/10.18860/kitaba.v1i1.21169>
- Osman, J., Bebe Mohamad, J., Ahmad, A. N., & Razali, J. R. (2018). Strategi pengajaran dan pembelajaran bahasa Melayu dalam kalangan pelajar antarabangsa di Universiti Malaysia Pahang [Malay language teaching and learning strategy among international students at Universiti Malaysia Pahang]. *PENDETA: Journal of Malay Language, Education and Literature*, 9, 61-79. <https://doi.org/10.37134/pendeta.vol9.6.2018>
- Raajkumar, J., & Aziz, A. B. A. (2024). Effectiveness of Bingo game in an ESL context: A qualitative study on ESL Learners' vocabulary acquisition. *International Journal of Academic Research in Business and Social Sciences*, 14(6), 1546-1557. <https://dx.doi.org/10.6007/IJARBS/v14-i6/21949>
- Rosli, S. F. N., Mhd Bakri, Y., & Abdullah, M. H. (2021). Persepsi guru pelatih terhadap penciptaan lirik lagu kanak-kanak melayu tradisional sebagai bahan pengajaran topik fotosintesis murid tingkatan satu. *Jurnal Peradaban Melayu*, 17(2), 22-29. <https://doi.org/10.37134/peradaban.vol17.2.3.2022>
- Saleh, F., Owon, R. A. S., Muhammadiyah, M., Palipi, R. E. A., Launingtia, I. G., & Leu, Y. Y. (2024). *Inovasi pembelajaran bahasa: teori dan praktik*. Widina Media Utama. Retrieved from

- <https://repository.penerbitwidina.com/media/publications/569648-inovasi-pembelajaran-bahasa-teori-dan-pr-e421cd5f.pdf>
- Shanmugan, S. K. S., Jusoh, Y., Veloo, A., Md Ali, R., & Hashim, R. A. (2023). *Pendidikan sekolah rendah murid orang asli cabaran dan pencapaian*. UUM Press.
- Sintian, M. (2018). *Variasi leksikal dalam dialek keluarga Dusun di Sabah*. (Unpublished doctoral thesis), Universiti Putra Malaysia, Malaysia. <http://psasir.upm.edu.my/id/eprint/68472/>
- Tongguritom, V., & Sintian, M. (2025). Impak media e-lagu untuk pengayaan kosa kata Bahasa Kadazandusun murid sekolah rendah luar bandar [The impact of e-song media on enriching the Kadazandusun language vocabulary for rural primary school students]. *PENDETA Journal of Malay Language, Education and Literature*, 16(1), 23-33. <https://doi.org/10.37134/pendeta.vol16.1.3.2025>
- Walker, L. (2024). *Music education in the urban classroom: Issues of equity and access* [Unpublished master's thesis]. Lindenwood University, Missouri. <https://digitalcommons.lindenwood.edu/theses/1196/>
- Wright, A., Betteridge, D., & Buckby, M. (2006). *Games for language learning* (3rd ed.). Cambridge University Press.