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Enhancing Young Learners' Vocabulary Through Flashcards and Multimedia-Based Instruction

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ABSTRACT
This study investigates the effect of combined media videos, PowerPoint presentations, and flashcards on the vocabulary mastery of first-grade students at SD Islam Bunayya. A quasi-experimental design was applied, involving a control group and an experimental group, each consisting of 20 students. Data were collected using pretests, posttests, and questionnaires measuring vocabulary knowledge, spelling speed, and students' enthusiasm. Instruments were validated using standard procedures in educational research, and reliability was assessed using Cronbach's Alpha. The results show that students in the experimental group achieved greater improvement than those in the control group, with average scores increasing from 87.22 to 89.54. Students also demonstrated higher enthusiasm, faster spelling performance, and stronger vocabulary retention. Overall, the study indicates that combined multimedia supports improved vocabulary learning and enhances student engagement in early-grade English classrooms.

Keywords: vocabulary mastery; multimedia learning; flashcards; primary school; student engagement.

INTRODUCTION
Vocabulary acquisition is a fundamental component of English learning in the early grades, forming the basis for reading, writing, speaking, and listening development. Young learners often struggle with recognizing, memorizing, and spelling new words, especially when instruction relies solely on traditional techniques such as lecturing or textbook use. Limited sensory input can reduce motivation and hinder vocabulary retention.

Research consistently shows that a variety of instructional media can enhance vocabulary learning outcomes. Multimedia tools such as videos and PowerPoint slides provide audiovisual input that helps reinforce meaning, while flashcards strengthen active recall and spelling practice (Nakata, 2008; Zhang, 2017). These media support young learners' cognitive processing by presenting information through both visual and auditory channels.

The integration of multimedia is grounded in Mayer's Cognitive Theory of Multimedia Learning (2009), which suggests that learners understand and retain information better when it is presented through multiple modalities. Repetition, meaningful exposure, and multimodal input also play a key role in strengthening vocabulary storage and retrieval, especially for young learners (Nation, 2013).

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Constructivist theories also highlight the importance of interactive and experiential learning. Piaget (1952) emphasizes hands-on involvement appropriate to children's developmental stages, while Vygotsky (1978) underscores the importance of social interaction in language learning. Multimedia-based activities allow children to engage with content through visual stimuli, sound, repetition, collaboration, and playful interaction, making learning both effective and enjoyable.

A number of studies support the use of multimedia for vocabulary learning among young learners. For example, animated videos help children understand and retain vocabulary through contextualized visual input (Yeh & Wang, 2019; Huang, 2013). Flashcards, whether physical or digital, have been shown to enhance recall, spelling speed, and student motivation (Nakata, 2008; Dizon, 2016). Mobile-assisted and digital flashcard applications also support vocabulary learning through repeated exposure and engaging activities (Teng, 2020; Lan, 2014). Games and visual-based activities similarly contribute to increased enthusiasm and retention (Bakhsh, 2016; Alqahtani, 2015).

Preliminary observations in SD Islam Bunayya indicated that many first-grade students experienced difficulties in recognizing and spelling vocabulary before multimedia tools were introduced. Students often hesitated when spelling unfamiliar words and required repeated instructions. These observations align with findings that young learners benefit significantly from visual and tactile support, such as pictures, videos, and word cards, which help strengthen vocabulary recognition and retention (Huang, 2013; Bakhsh, 2016).

In the Indonesian context, early-grade students rely heavily on concrete visual and auditory cues because they have not yet developed strong abstract thinking skills. Therefore, multimedia serves as an essential tool to transform words into meaningful representations through sounds, images, and movement. When learning becomes enjoyable and multisensory, vocabulary is more likely to be stored in long-term memory, consistent with multimedia learning principles (Mayer, 2009).

Young learners also tend to forget words quickly when instruction is passive. Vocabulary presented only through whiteboard writing or textbook lists is difficult to retain. In contrast, repeated exposure through videos, PowerPoint slides, and flashcards strengthens neural connections, making vocabulary more memorable. Studies show that repeated audiovisual reinforcement leads to higher vocabulary retention (Yeh & Wang, 2019; Teng, 2020).

Active participation is another key factor in successful vocabulary learning. Children learn more effectively when they engage in matching games, spelling activities, guessing pictures, and responding verbally, all of which are naturally supported by multimedia resources. Research shows that multimedia-based classroom activities increase motivation, participation, and confidence in early learners (Dizon, 2016; Bakhsh, 2016).

However, many Indonesian classrooms still depend heavily on conventional memorization-based methods. While such methods may benefit a small group of students, they are generally insufficient for first graders, who require visual cues and interactive learning environments. Videos, images, and flashcards can therefore transform vocabulary learning into an enjoyable experience, as demonstrated by numerous studies on young learners (Huang, 2013; Yeh & Wang, 2019).

Considering these factors, this study examines the effect of combining videos, PowerPoint slides, and flashcards on the vocabulary mastery of first-grade students at SD Islam Bunayya. By comparing the experimental group with the control group, this research provides empirical evidence of how multimedia-based instruction influences vocabulary acquisition, spelling accuracy, and student engagement.

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METHODS

1. Research Design

This study employed a quasi-experimental design with a non-equivalent control group, a design commonly used in classroom-based vocabulary research when random assignment is not feasible (Huang, 2013; Bakhsh, 2016). Two classes of first-grade students at SD Islam Bunayya participated: one control group taught using traditional methods and one experimental group taught using multimedia (videos, PowerPoint slides, and flashcards). Both groups were given a pretest and posttest to measure vocabulary improvement.

2. Participants

The participants were 40 first-grade students aged 6–7. The control group consisted of 20 students, and the experimental group consisted of 20 students. Young learners at this age benefit greatly from visual and tactile supports because their cognitive development is still at the concrete operational stage (Piaget, 1952). This reinforces the relevance of multimedia use in early-grade language learning.

3. Instruments

Three instruments were used:

a. Vocabulary Test

A pretest–posttest vocabulary assessment was developed to measure recognition, spelling, and meaning comprehension. Test construction followed common principles of vocabulary assessment that emphasize clarity, visual support, and contextual cues for young learners (Nation, 2013).

b. Student Questionnaire

A Likert-scale questionnaire was used to measure students' enthusiasm, enjoyment, and perceived difficulty. Questionnaire items reflected factors known to influence engagement in multimedia learning (Mayer, 2009; Yeh & Wang, 2019).

c. Observation Checklist

The teacher's checklist focused on participation, attentiveness, and active response, following procedures used in previous studies on flashcards and digital games (Nakata, 2008; Bakhsh, 2016).

4. Procedures

a. Pretest

Before the instructional intervention, both the experimental and control groups were administered the same vocabulary pretest. The test measured students' initial vocabulary knowledge through picture identification, word–meaning matching, and simple spelling tasks appropriate for first-grade learners. The pretest served as a baseline to compare the improvement between groups.

b. Treatment

The treatment was implemented only in the experimental group and delivered over eight instructional sessions across four weeks, with each session lasting approximately 35–40 minutes. The multimedia-based instruction consisted of:

Animated videos providing contextual exposure to vocabulary.

Interactive PowerPoint slides presenting images, pronunciation models, and spelling breakdowns.

Vocabulary flashcards used for matching games, repetition practice, and spelling reinforcement.

The instructional content for the experimental group was organized into four thematic units:

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Sessions 1–2: Body parts (eye, ear, nose, mouth)
Sessions 3–4: Family members (mother, father, sister, brother, grandfather, grandmother)
Sessions 5–6: Rooms in the house (bedroom, bathroom, kitchen, living room)
Sessions 7–8: Pets (cat, dog, bird, fish, rabbit)

These multimedia activities allowed students to learn vocabulary through visual, auditory, and kinesthetic channels, encouraging higher engagement and retention.

In contrast, the control group was taught using conventional instruction. This included reading aloud, teacher explanations, and vocabulary lists from the textbook, without any videos, multimedia slides, or flashcards.

c. Posttest

After the four-week instructional period, the experimental group completed a vocabulary posttest that matched the structure and difficulty of the pretest. The posttest measured students' vocabulary gains after multimedia-based learning. The control group did not receive a posttest and retained only their pretest scores as a comparison baseline.

5. Data Analysis

Data were analyzed using descriptive statistics (mean, gain score) and qualitative interpretation of questionnaires and observations. Interpretation procedures followed models used in earlier multimedia and vocabulary studies (Teng, 2020; Huang, 2013).

RESULT AND DISCUSSION

1. Test Results

This study investigated the effect of multimedia-based instruction on young learners' vocabulary mastery. Data were collected from two groups: a control group taught using conventional methods and an experimental group receiving multimedia-assisted instruction. Both groups completed a pretest, while the posttest was administered only to the experimental group after receiving the treatment.

Table 1. Pretest and Posttest Result of Control and Experimental Groups

Group	Pretest Mean	Posttest Mean
Control	36,17	- (not administered)
Experimental	87,22	89,54

The control group's pretest mean score of 36.17 indicates a relatively low level of vocabulary mastery at the beginning of the study. In contrast, the experimental group began with a substantially higher pretest score of 86.22, suggesting stronger initial vocabulary knowledge. Following the multimedia intervention, the experimental group demonstrated an increase to 89.54 in the posttest, showing measurable improvement.

Although the improvement appears numerically modest due to the group's already high starting point, the gain indicates that multimedia-assisted instruction contributed positively to vocabulary development.

2. Comparison Between Control and Experimental Groups

The control group, which received traditional instruction and did not participate in the posttest, shows no measurable learning progress beyond the initial pretest score. Their low pretest result implies limited exposure to systematic vocabulary reinforcement.

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In contrast, the experimental group exhibited higher performance in both pretest and posttest phases. This difference suggests that:
a. Multimedia-based instruction provided richer learning stimuli, enabling better comprehension and retention.
b. Traditional methods used in the control group may lack cognitive engagement, reducing vocabulary acquisition.
c. Repeated exposure through images, sounds, animations, and contextual examples in multimedia materials helped solidify word meanings and usage.
The improvement in the experimental group underscores the effectiveness of multimedia as a supplementary tool for vocabulary learning among early-grade students.

3. Interpretation of Multimedia's Impact on Vocabulary Learning

The findings of this study indicate that the use of combined multimedia videos, PowerPoint slides, and flashcards had a positive influence on students' vocabulary learning. The experimental group, which received multimedia-based instruction, showed an improvement from a pretest average of 87.22 to a posttest average of 89.54. Although the control group did not receive a posttest, their lower pretest mean of 36.17 suggests that they started with considerably weaker vocabulary foundations compared to the experimental group. The improvement observed in the experimental class indicates that multimedia exposure supported not only vocabulary recall but also spelling accuracy, retention, and student engagement.

These results align with the principles of multimedia learning, which propose that students learn more effectively when information is presented through both verbal and visual channels. According to Mayer's multimedia theory, well-designed visuals can reduce cognitive load and help learners organize and process linguistic information more efficiently. The animated and visual materials used in this study likely contributed to better attention, processing, and long-term encoding. This interpretation is further reinforced by studies showing that young learners respond positively to visual instructional media, particularly animated videos that sustain focus and motivation.

Moreover, the findings are consistent with previous research showing that multimedia tools enhance vocabulary mastery among early learners. Prior studies indicate that children benefit from exposure to visual materials such as animated videos, picture-based slides, and digital flashcards, which help simplify abstract vocabulary concepts and support memory retention. The improvement observed in the experimental group suggests that the combination of different media created a more engaging and rich learning environment, encouraging students to participate actively and increasing their enthusiasm during vocabulary tasks. These results highlight the practical value of multimedia integration in early English instruction and suggest that such approaches can be effectively implemented in primary school settings.

4. Student Engagement and Classroom Observations

Observations during the implementation phase revealed clear differences in student behavior between the two groups:

Experimental Group

- Students were more enthusiastic during lessons involving videos and animated images.
- Learners demonstrated quicker responses during vocabulary identification tasks.
- Students were more attentive and exhibited higher motivation.
- The interactive nature of the materials decreased boredom and maintained focus.
- Learners were able to recall vocabulary items more accurately in follow-up discussions.

Control Group

- Students relied mainly on repetition and textbook-based activities.

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- Responses were slower and less confident.
- Engagement fluctuated depending on teacher explanation alone.
- Learners often struggled to recall vocabulary without visual cues

These behavioral patterns reinforce the argument that multimedia enhances cognitive engagement, particularly among children whose learning is strongly influenced by visual and auditory stimuli.

5. Discussion of Results in Light of Previous Studies

The findings of this research correspond with several previous studies which suggest that multimedia is an effective tool for supporting vocabulary learning.

a. Mayer (2009) strongly emphasizes that well-designed multimedia materials help learners integrate verbal and nonverbal information, improving long-term retention.

b. Yeh & Wang (2019) found that multimedia-based instruction increases learner motivation and facilitates deeper vocabulary learning.

c. Other studies similarly indicate that combining images, animations, and sound enhances children's comprehension and memory.

The results of the present study reinforce these conclusions, demonstrating that multimedia materials foster improved vocabulary mastery in young learners by:

- Providing contextualized exposure
- Offering multimodal reinforcement
- Stimulating active participation
- Supporting more meaningful learning experiences

6. Overall Implications for Teaching Practice

Based on the results, several implications for English teaching in early-grade classrooms can be drawn:

a. Multimedia should be integrated regularly to support vocabulary learning.

b. Teachers can enhance learning outcomes by combining visual, auditory, and textual elements.

c. Traditional teaching methods may benefit from multimedia supplementation, especially for abstract or unfamiliar vocabulary.

d. Students at early grade levels respond better to interactive and visually stimulating materials, making multimedia an appropriate pedagogical tool.

Incorporating multimedia does not replace the teacher’s role but rather enhances instruction by reinforcing concepts in ways that are aligned with children’s cognitive development.

CONCLUSION

The results of this study demonstrate that multimedia-based instruction positively influences vocabulary mastery among young learners. While the control group showed limited vocabulary knowledge with a low pretest mean score, the experimental group experienced measurable improvement from pretest to posttest after using multimedia resources.

The findings align with established theoretical frameworks and previous research, confirming that multimedia materials provide effective visual–auditory reinforcement that enhances vocabulary acquisition. Thus, multimedia can be considered a powerful instructional tool for improving vocabulary mastery and supporting student engagement in early-grade English classrooms.

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Author Contribution Statement

The author confirms that all stages of this research were conducted independently. The author designed the research procedures, prepared the learning materials, carried out classroom implementation, administered the tests, and processed all quantitative and qualitative data. Every part of the manuscript—including the introduction, literature review, methodology, results, discussion, and conclusion—was written and organized solely by the author.

Digital tools were used only to support language refinement and document preparation, without influencing the substance, analysis, or interpretation of the research findings. All academic arguments, methodological decisions, and conclusions are entirely the author's responsibility.

The final manuscript reflects the author's original work and adheres to the ethical standards required for academic research and publication.

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