

Effect of Multimedia Interactive Games on the Language Vocabulary Acquisition Skills of Grade One Learners

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Abstract. This study aimed to determine the effect size of the multimedia interactive games to the language vocabulary acquisition skills of the grade one learners. The study utilized a quasi-experimental design. A total of 60 Grade One learners in the Sulop Central Elementary School in Sulop District, Division of Davao del Sur were identified through purposive sampling. A researcher-made questionnaire was utilized in the gathering of data. Mean, Sample T-test, and Eta-squared were used as statistical tools of the study. Results revealed on the pretest mean score of the control group and experimental group; both had low mean scores in language vocabulary acquisition skills before being exposed to the multimedia interactive games approach. In addition, on the posttest mean score it was revealed that the experimental group, which was exposed to the multimedia interactive games, demonstrated a higher posttest mean score categorized as High, compared to the control group. Moreover, on the significant difference between the mean gains scores of students revealed that there is a statistically significant difference between the two groups' posttest scores. Lastly, on the effect size of multimedia interactive games results revealed a large effect size. This large effect size emphasizes the significant and impactful role that multimedia interactive games play in enhancing vocabulary acquisition skills among the Grade One learners. Thus, the study recommends teachers should use these resources into their lesson plans to create interesting and dynamic learning environments.

KEY WORDS

1. Multimedia interactive games 2. vocabulary 3. quasi-experimental design

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1. Introduction

In this digital age, multimedia interactive games are significant means to increase vocabulary among young Filipino learners. These interactive games bring about the teaching of vocabulary effectively through visual elements, sound effects, and challenges. They merge animation and audio into interesting learning events. These tools, tailored to different learning styles and needs of the Filipino learner, help

to enhance word retention and comprehension. These interactive games, with technological advancement, go on changing the face of language learning by facilitating dynamic and contextual vocabulary growth opportunities.

In the division of Davao del Sur, particularly in Sulop District, Grade One learners manifest a severe deficiency in their language vocabulary acquisition skills. Based on the assessment

result of the Comprehensive Rapid Literacy Assessment (CRLA) of school year 2023-2024 and the previous years' assessment, most of the grade one learners still need more time to comprehend deeply the meaning of each word acquired and used. In view of the foregoing gap, this research study proposes the adoption of the application of multimedia interactive games as an innovative educational intervention to enhance language vocabulary acquisition skills among Filipino elementary students, particularly the grade one learners. As a result, the study sought to investigate the effectiveness of Multimedia Interactive Games on the Language Vocabulary Acquisition Skills of Grade One Learners.

The specific objectives of the study are the following: a.) to determine the pretest mean score of the control group and the experimental group. b.) to determine the posttest mean score of the control group and the experimental group. c.) to determine if there is a significant difference between the mean gain scores of the learners in the control group and the experimental group, and d.) to determine the effect size of the Multimedia Interactive Games to the language vocabulary acquisition skills of the grade one learners.

At .05 level of significance, the following hypotheses were tested: a.) There is no significant difference between the mean gain scores of the learners in the control group and the experimental group, and b.) There is no significant effect of multimedia interactive games on the language vocabulary acquisition skills as indicated by eta squared.

2. Methodology

This section delineated the methodologies employed by the researcher to conduct the study. It encompassed the population and sampling, instrumentation, data source, and data analysis.

This study's findings assist multiple educational stakeholders by highlighting the importance of multimedia and technological games in improving early learners' vocabulary. The Department of Education can utilize these insights to enhance curriculum development, inform policy, and direct teacher training, while school administrators can make strategic choices on investments in digital tools and the promotion of innovation. Moreover, educators are urged to implement captivating, customized strategies that facilitate language acquisition and enhance professional advancement. Future scholars establish a basis for investigating technology-driven therapies, while community groups can create focused initiatives that enhance literacy and educational outcomes. Ultimately, young learners derive the greatest advantage, as these participatory techniques cultivate drive, confidence, and academic achievement.

Figure 1 illustrated the conceptual framework delineating the study's variables. This highlighted the interaction between the independent and dependent variables. The figure indicated that the use of multimedia interactive games such as Space Race, Family Feud, Let's Dance Game, Guess the Picture, and Spin the Wheel Challenge was the independent variable in the study. Meanwhile, the dependent variable was the language vocabulary acquisition skills of Grade One Learners. Ultimately, the aim of this study was to determine the effect size of the Multimedia Interactive Games to the language vocabulary acquisition skills of the grade one learners.

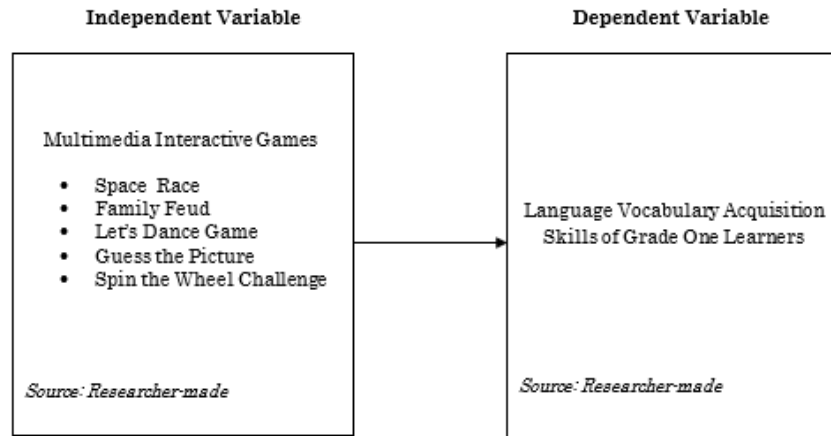


Fig. 1. Conceptual Framework

2.1. Research Design—The study utilized a quasi-experimental design, namely the non-equivalent pretest-posttest control group design, which is particularly successful for health and educational research in the absence of random assignment (Gopalan et al., 2020). The study had two intact groups: a control group that underwent traditional education and an experimental group that received the intervention which was the usage of multimedia interactive games. The implementation of a control group enabled researchers to establish a comparative baseline, facilitating the isolation of the intervention's effects (Thomas, 2020). Both groups had pretests and posttests to enable a descriptive examination of performance variations over time, consistent with Miller et al. (2019) assertion regarding the significance of quasi-experimental designs in the absence of randomization. The study utilized quantitative analysis to discern substantial differences in mean scores between pretest and posttest findings for both groups, thereby elucidating the efficacy of the multimedia interactive games such as Space Race, Family Feud, Let's Dance Game, Guess the Picture, and Spin the Wheel Challenge in the language vocabulary acquisition skills of Grade One learners.

2.2. Research Respondents—The research was carried out at Sulop Central Elementary School in the Sulop District, Division of

Davao del Sur, employing a purposive sampling method to choose respondents according to the researcher's assessment of those most capable of supplying the requisite information (Etikan, 2016). Participants were intentionally selected based on established criteria from two different general section classes taught by the researcher. Two entire first-grade classes were assigned as the experimental and control groups, each including 30 pupils, resulting in a total of 60 participants. A pretest was conducted for both groups to evaluate baseline vocabulary skills. The experimental group participated in multimedia interactive game-based activities, including Space Race, Family Feud, Let's Dance Game, Guess the Picture, and Spin the Wheel Challenge, aimed at improving vocabulary acquisition. Conversely, the control group received teaching using traditional lecture-based methods. The researcher conducted both groups during standard fifty-minute English classes in the second and third quarters.

2.3. Research Instrument—The researcher developed a test focusing on the competencies outlined in English One, using a table of specifications as a guide for item construction. The questionnaire was validated by experts to ensure content accuracy and relevance. Both the experimental and control groups were administered the test as a pretest and posttest to measure their

language vocabulary acquisition skills. Following the initial administration, the test results underwent item analysis to assess the quality

of each question, with any rejected items being discarded in the final version of the test.

2.4. Data Gathering Procedure—This study utilized a systematic and well-designed data collection approach to guarantee the accuracy and integrity of the results. First, the researcher initiated the entire process by formally soliciting and obtaining authorization from the Dean of the Graduate School of Rizal Memorial Colleges and the Office of the Division Superintendent, which was thereafter communicated to the heads of the institutions that were involved. Parental consent forms were disseminated to guarantee that parents or guardians were thoroughly apprised of the study's aims. Before its administration, the questionnaire was subjected

to content validation by a panel of experts who evaluated each item with a standardized validation sheet, providing comprehensive feedback and recommendations for enhancement. Following modifications informed by expert feedback, a pilot test involving 30 learners, who were not part of the primary study, was executed to assess the instrument's clarity, reliability, and overall efficacy. The completed surveys were subsequently administered in person. The collected data were analyzed and interpreted using the Statistical Package for the Social Sciences (SPSS), which enabled thorough statistical evaluation in accordance with institutional norms.

2.5. Data Analysis—Mean, Independent Samples t- test, and Eta Squared were the statis-

tical tools employed in the study.

3. Results and Discussion

This section highlighted the results and discussions of the study. The presentation started with the discussion on the mean scores of pretests and posttest for the control group and experimental group. Followed by, the discussion on the significant difference of the mean gain scores of the two groups. Lastly, the discussion of the effect size of the Multimedia Interactive Games to the language vocabulary acquisition skills of the grade one learners.

3.1. Pretest Mean Score of the Control Group and Experimental Group—Table 1 presented the pretest mean score of the control group and experimental group. Based on the result, both the Control Group and the Experimental Group had low mean scores in language vocabulary acquisition skills before being

exposed to the multimedia interactive games approach. The Control Group had a mean score of 11.84, while the Experimental Group had a mean score of 12.89, both of which fall within the Low performance category which also means that the mean gain scores of the learner-respondents were below expectations, showing limited progress.

3.2. Posttest Mean Score of the Control Group and Experimental Group—Table 2 showed the posttest mean score of the experimental and control group. The results revealed

that the experimental group, which was exposed to the multimedia interactive games, demonstrated a significantly higher posttest mean score of 23.52, categorized as High which also means

Table 1. Pretest Mean Score of the Control Group and Experimental Group

Group	N	Mean	Descriptive Interpretation
Control Group	30	11.84	Low
Experimental Group	30	12.89	Low

Legend: 10 below: Very Low, 11–15: Low, 16–20: Average, 21–25: High, 26–30: Very High
 that the mean gain score of the experimental group were very good, reflecting strong improvement, compared to the control group, which had a mean score of 16.26, categorized as Average, this means that the mean score of the control group were satisfactory indicating moderate improvement.

Table 2. Posttest Mean Score of the Control Group and Experimental Group

Group	N	Mean	Descriptive Interpretation
Control Group	30	16.26	Average
Experimental Group	30	23.52	High

Legend: 10 below: Very Low, 11–15: Low, 16–20: Average, 21–25: High, 26–30: Very High

3.3. Significant Difference between the mean gain scores of the students in the control group and experimental group—The findings in Table 3 reveal a significant difference between the mean gain scores of students in the control group and the experimental group. The calculated t-value of -20.89 and the p-value of .000 which is less than the standard level of significance of 0.05 suggest that there is a statistically significant difference between the two groups' posttest scores. The negative t-value indicates that the experimental group, which was exposed to the multimedia interactive games approach, had a significantly higher mean gain score compared to the control group, which did not receive this exposure. Given the p-value of .000, the null hypothesis which stated that there is no significant difference between the mean gain scores of the students in the control group and experimental group was rejected, confirming that the multimedia interactive games approach had a substantial impact on the language vocabulary acquisition skills of the learners.

Table 3. Significant Difference Between the Mean Gain Scores of the Students in the Control Group and Experimental Group

Variable Paired	N	df	t-value	p-value	Descriptive Interpretation
Posttest of Control Group and Experimental Group	60	58	-20.89	.000	Significant

3.4. *Effect Size of the Multimedia Interactive Games to the Language Vocabulary Acquisition Skills of the Grade One Learners*—Table 4 provided insight into the effect size of multimedia interactive games on the language vocabulary acquisition skills of Grade One learners. The t-value of -20.89 is accompanied by an Eta-Squared value of 0.831, which indicates a large effect size. Eta-Squared is a measure of the proportion of variance in the dependent

variable which was language vocabulary acquisition skills that is explained by the independent variable—multimedia interactive games. With a value of 0.831, this suggests that a substantial portion (83.1) of the variance in vocabulary acquisition can be attributed to the exposure to multimedia interactive games. This large effect size emphasizes the significant and impactful role that multimedia interactive games play in enhancing vocabulary acquisition skills among the Grade One learners.

Table 4. Effect Size of the Multimedia Interactive Games to the Language Vocabulary Acquisition Skills of the Grade One Learners

N	t-value	Eta-Squared	Descriptive Interpretation
60	-20.89	0.831	Large

4. Conclusions and Recommendations

The study sought to investigate the effectiveness of Multimedia Interactive Games on the Language Vocabulary Acquisition Skills of Grade One Learners. The specific objectives of the study are the following: a.) to determine the pretest mean score of the control group and the experimental group. b.) to determine the posttest mean score of the control group and the experimental group. c.) to determine if there is a significant difference between the mean gain scores of the learners in the control group and the experimental group, and d.) to determine the effect size of the Multimedia Interactive Games to the language vocabulary acquisition skills of the grade one learners. The following were the significant findings:

4.1. *Findings*—On the pretest mean scores show that both the Control Group and the Experimental Group had low competency in language vocabulary acquisition skills prior to the intervention. This finding implies that participants in both groups had equal baseline vocabulary skills prior to being exposed to the multimedia interactive games strategy. Such homogeneity in pretest scores verifies the comparability of the two groups, increasing the reliability of subsequent studies of the intervention's success. It underlines the possible need for new instructional methods, such as multimedia interactive games, to close vocabulary acquisition gaps and improve language learning results.

On the posttest mean scores, results revealed that significantly higher posttest mean scores of the experimental group, categorized as High, highlight the effectiveness of the multimedia interactive games approach in improving language vocabulary acquisition skills among Grade One learners. This improvement, reflected in the very good mean gain score of the experimental group compared to the Average scores of the control group, underscores the value of integrating interactive multimedia tools in language instruction.

On the analysis of significant difference on the mean gain scores of both groups, results reveals a statistically significant difference in

mean gain scores between the experimental and control groups, underscored by a negative t-value and a p-value below 0.05. This indicates that multimedia interactive games have a notably superior impact on language vocabulary acquisition compared to traditional instructional methods. Such findings strongly advocate for the integration of these innovative tools in educational settings to enhance learning outcomes.

4.2. Conclusions—On the analysis of effect size, substantial impact of multimedia interactive games on vocabulary acquisition underscores their potential to transform educational outcomes. By leveraging these engaging resources, educators can create more dynamic and effective learning environments, significantly benefiting young learners in their language development journey.

4.3. Recommendations—Based on the conclusions, it is recommended that the Department of Education develop policies to integrate multimedia interactive tools like Space Race, Family Feud, Let's Dance Game, Guess the Picture, and Spin the Wheel Challenge into elementary curricula, with school heads launching pilot programs and allocating resources to support implementation. Teachers are encouraged to incorporate these tools into lesson plans and engage in professional development, while parents should support their use at home and collaborate with educators. Students are urged to actively participate in these activities to enhance vocabulary and language skills, and future researchers are advised to investigate the long-term impacts of such tools across various educational settings.

5. References

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