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The Use of Multi-Media Instructional Materials in Relation to Pupils' Academic Performance

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ABSTRACT

Assessment of the effectiveness of integrating multimedia instructional materials has become very important as a way of ascertaining how the interaction of multimodal stimuli with digital interactive multimedia materials can improve students' cognitive involvement and positively affect their performance in subject-based contexts. In this context, this study investigated the utilization of multimedia instructional materials in relation to the academic performance of Grade 6 pupils at Andres Bonifacio Elementary School II. The research aimed to determine whether modern pedagogical tools—specifically televisions, LED projectors, laptops, and interactive boards—have a significant influence on student outcomes. A descriptive-correlational research design, using self-structured questionnaires validated through existing literature, was utilized to gather data from 185 Grade 6 pupils. Data were interpreted using statistical analysis, including z-tests to determine differences based on sex, parental education, and income; One-way ANOVA for section-based differences; and Pearson's R to examine the relationship between multimedia use and academic performance. The findings revealed that televisions, LED projectors, and laptops were used to a "great extent," while whiteboards/Panaboards were used to a "moderate extent." While significant differences in tool utilization were observed across demographic variables (sex, income, and section), the pupils' overall academic performance remained at a "satisfactory" level. The study concludes that while teachers frequently integrate technology into the classroom, the extent of multimedia utilization does not have a significant relationship with pupils' academic performance. This suggests that technology alone is not a primary driver of grades. It is recommended that school administrators and ICT coordinators conduct regular monitoring and design specialized programs to better integrate these technologies into the curriculum, specifically targeting and improving academic outcomes.

Keywords: Academic Performance; Instructional Materials; Multimedia Use

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INTRODUCTION

The rapid development in technology and communication has greatly influenced learners' lives and behaviors. To keep up with learners, the school encourages teachers to adapt technology and integrate ICT, especially multimedia, into their instruction.

Multimedia is the integration of multiple media forms. The text, audio, still images, animation, or interactive content, and the forms and presentations involving audio and video clips would be considered a "multimedia presentation". Educational software that involves animations, sound, and text is called "multimedia software". CDs and DVDs are often considered "multimedia formats" because they can store large amounts of data, and most forms of multimedia require significant disk space.

According to Haleem et al. (2022), multimedia technology provides a "rich, immersive environment" that transcends traditional text-based learning. Their study suggests that combining various formats, including 3D simulations, high-definition video, and interactive graphics, enhances cognitive engagement, enabling students to connect abstract ideas to practical applications. Utilizing multimedia information was shown to enhance memory and promote active engagement among learners. Students grasp concepts better when they recognize the significance and relevance of the content presented in class. Creating a supportive classroom environment is a key strategy for promoting behavioral and emotional engagement, which is essential for reaching the ultimate goal of student learning. Their research emphasizes that when teachers move beyond one-way lectures to create interactive dynamics (such as effective feedback loops and peer interaction), students develop a stronger sense of school identification and motivation, which are critical precursors to deep learning (Oliver et al., 2020; Frontiers in Education, 2021).

The researcher, a teacher at Andres Bonifacio Elementary School II, has a television set to aid learning. Teachers at the Grade 6 level in the same institution are using laptops and overhead projectors to present their lessons. However, there were still classes in which pupils were not performing well. Though multimedia equipment is available, teachers may not use it as often as needed, and others may not use it at all.

With this, the researcher felt the need to determine the extent of multimedia instructional materials use and whether there is a relationship with pupils' academic performance, so that an enhancement program for teachers in their use of multimedia instructional materials will be emphasized.

OBJECTIVES OF THE STUDY

This study aimed to determine the use of multimedia instructional materials and their relationship to the academic performance of Grade Six pupils. Specifically, it sought to assess the extent of the use of multimedia instructional materials in terms of electronic hardware, including television, LCD/LED projector, laptop, and widescreen/Panaboard. It also aimed to determine whether there were significant differences in the extent of multimedia use across these instructional tools and whether there were significant differences in the pupils' academic performance when grouped according to the same variables. Finally, the study examined whether a significant relationship existed between the extent of the use of multimedia instructional materials and the academic performance of Grade Six pupils.

LITERATURE REVIEW

The use of multimedia instructional materials has significantly transformed the teaching-learning process by creating more interactive, engaging, and learner-centered classrooms. Multimedia resources such as videos, animations, simulations, presentations, and other digital technologies enable teachers to present complex concepts through both visual and auditory channels, thereby improving learners' understanding and retention of information. Zhou (2023) emphasized that multimedia-enhanced instruction promotes deeper learning by stimulating multiple senses, while Kassa et al. (2024) reported that students exposed to multimedia instruction achieved significantly better learning outcomes than those taught through conventional methods. Similarly, Ahmed et al. (2025), Hidayati and Slamet (2023), Amores (2025), and the Misamis Oriental Study (2025) found that multimedia-rich classrooms increase students' motivation, participation, and overall learning experiences. These findings support Mayer's Cognitive Theory of Multimedia Learning (2024), which posits that learners understand concepts more effectively when verbal and visual information are presented simultaneously.

The literature further suggests that multimedia instructional materials foster active learning by promoting student engagement, collaboration, and higher-order thinking skills. According to Bykonia et al. (2024), multimedia enhances learners' creativity, flexibility, and motivation, while Hidayati and Slamet (2023) observed that multimedia-supported learning management systems generate higher classroom engagement than traditional instructional approaches. Likewise, Weng and Zhang (2025) and Gong et al. (2021) demonstrated that immersive multimedia environments positively influence students' behavioral, emotional, and cognitive engagement. Multimedia also supports differentiated instruction by accommodating various learning styles and

allowing learners to progress at their own pace through diverse instructional formats, including visual, auditory, and interactive resources (Zhou, 2023; Hidayati & Slamet, 2023; Meta-analysis, 2025).

A growing body of research indicates that multimedia instructional materials contribute significantly to students' academic performance. Won et al. (2025) reported that multimedia instructional strategies resulted in higher posttest scores, while Kassa et al. (2024) found that students receiving multimedia-assisted instruction outperformed those taught using traditional approaches. Similarly, Ahmed et al. (2025) and Zhou (2023) concluded that multimedia facilitates faster concept acquisition, deeper understanding, and improved knowledge transfer. Guided by Mayer (2024) and Marougkas et al. (2024), multimedia reduces unnecessary cognitive load by presenting information in manageable and meaningful formats. Furthermore, York et al. (2024) and Williams (2023) recognized academic performance as a multidimensional outcome influenced by learning environments, whereas Bandura's Social Cognitive Theory emphasizes that multimedia strengthens learners' self-efficacy through instructional scaffolding, immediate feedback, and incremental mastery experiences.

Despite its numerous educational benefits, multimedia integration also presents several implementation challenges. Perez-Juarez et al. (2024) identified digital distraction as one of the major threats to effective learning in technology-rich classrooms, while Zhou (2023) cautioned that excessive multimedia use may result in cognitive overload, limiting students' ability to process and retain information. Moreover, Amores (2025) highlighted inadequate technological infrastructure and limited teacher preparedness as persistent barriers to successful multimedia integration. The Misamis Oriental Study (2025) likewise emphasized that teachers' competence in designing and implementing multimedia-supported instruction largely determines the effectiveness of technology integration. These findings underscore the importance of continuous professional development, institutional support, and adequate technological resources to maximize the benefits of multimedia-enhanced learning.

Foreign and local literature consistently demonstrates that multimedia serves as a valuable instructional strategy for improving academic achievement, learner motivation, and educational equity. Hassan et al. (2025) observed that multimedia resources help reduce achievement gaps among learners from varying socioeconomic backgrounds by providing equitable access to quality educational content. Likewise, Chen and Wang (2024) found that multimedia enhances information retention by accommodating multiple learning styles, while Akantagriwon et al. (2025) and UNESCO (2023) reported improved academic performance and independent learning through multimedia-supported instruction. Mensah and Ampadu (2024) further argued that the strategic integration of multimedia both inside and outside the classroom is a strong predictor of academic success, provided that teachers effectively align technology with curriculum objectives and learners' developmental needs.

Overall, contemporary research strongly supports the integration of multimedia instructional materials as an effective means of enhancing both the teaching-learning process and students' academic performance. Local studies by IJELS (2024), Philippine E-Journals (2024), and JOCSS (2025) concluded that multimedia facilitates the learning of complex concepts while promoting collaboration, critical thinking, and other 21st-century competencies. Moreover, the meta-analysis conducted by Lawson and Mayer (2022) confirmed that students exposed to multimedia instruction consistently achieve significantly higher academic performance than those taught using conventional methods. However, Research Publish Journals (2025) and Dellegue and Galigao (2025) emphasized that multimedia yields optimal results only when it is purposefully aligned with curriculum objectives and supported by competent teachers. Collectively, the literature suggests that the successful integration of multimedia depends not merely on the availability of technology but on its pedagogically sound implementation, supported by teacher competence, curriculum alignment, and institutional commitment.

METHODOLOGY

Research Design

This study employed a descriptive-correlational research design to determine the extent of the use of multimedia instructional materials and its relationship with the academic performance of Grade Six pupils. Descriptive research was utilized to describe, analyze, and interpret existing conditions and practices, while correlational research examined the nature, degree, and direction of the relationship between the variables under investigation (Aquino, 2014; Creswell, 2012). This design was considered appropriate because it enabled the researcher to accurately describe the current use of multimedia instructional materials and determine whether a significant relationship existed between their use and pupils' academic performance.

Study Respondents

The participants of this study consisted of 185 Grade Six pupils selected from a population of 344 enrolled pupils during the School Year 2017–2018. The sample size was determined using the Slovin Formula, while stratified random sampling was employed to ensure that each pupil had an equal chance of being selected and that all sections were proportionately represented. The participants' academic performance was obtained from their average grades as recorded by their class advisers, while demographic information such as sex, section, parents' highest educational attainment, and average monthly family income was

gathered through the first part of the research questionnaire. This sampling procedure ensured that the selected respondents adequately represented the study population.

Instruments

The researchers used a self-structured questionnaire adapted from related books and studies as the primary data collection instrument. It consisted of two parts: Part 1 gathered the respondents' profile in terms of sex, section, parents' highest educational attainment, and average monthly family income, while Part 2 assessed the extent of teachers' use of multimedia instructional materials using a five-point Likert scale (Always, Often, Sometimes, Rarely, Never). For validity, the instrument was reviewed by the researcher's adviser, a research expert, and three jurors with master's and doctoral degrees using Good and Scales' criteria, and was certified as valid with a computed validity index of 4.66, interpreted as excellent. For reliability, the instrument was tested using Cronbach's Alpha with 30 randomly selected pupils from Andres Bonifacio Elementary School, yielding a reliability coefficient of 0.912, also interpreted as excellent, indicating strong internal consistency.

Data Gathering Procedure

In gathering information about the study, the researcher followed several procedures. The researcher chose a topic relevant to her school and obtained her adviser's approval. The preliminary process consisted of securing approval from the School Principal by asking the Class Advisers to validate the ranking results for pupils in each section and grade level. The researcher then met the teachers to tally, tabulate, and analyze the baseline data. The researcher conducted the survey questionnaire among the respondents. The results were then gathered, tallied, and analyzed. The results from both the academic performance and the survey questionnaire were then compared within the group and across the aforementioned variables.

Data Analysis and Statistical Treatment

The study employed two analytical schemes, namely descriptive and comparative. The descriptive analytical scheme, using the mean, was applied to Objective 1 to determine the extent of teachers' use of multimedia instructional materials. The comparative analytical scheme, also using the mean, was used for Objectives 2, 3, and 4 to compare the extent of use of multimedia instructional materials when respondents were grouped according to the given variables. For Objective 5, a relational analytical scheme was used, employing the z-test to determine the relationship between the extent of use of multimedia instructional materials and pupils' academic performance.

Ethical Consideration

The researcher strictly adhered to all established ethical guidelines to safeguard the rights, dignity, and overall welfare of the participants. Before data collection, both teachers and learners were fully briefed on the study's objectives, purpose, and limitations. Participation was entirely voluntary, with all subjects explicitly informed of their right to decline participation or withdraw from the study at any point without facing penalties or negative repercussions.

To ensure complete privacy, all data obtained from the respondents was processed with strict confidentiality and anonymity. Personal identities and names were omitted from both the questionnaires and the final output report, and students' grades were handled with high security. Questionnaire responses were analyzed solely in the aggregate, protecting individual participants from any potential negative outcomes or unauthorized data access. The researcher committed to utilizing the gathered information ethically, responsibly, and transparently. Participants were informed from the outset regarding how the findings would be disseminated and how the study's outcomes would be used to enhance teacher learning and multimedia utilization in the classroom.

RESULTS AND DISCUSSION

This section emphasizes the presentation, analysis, and interpretation of the data in this research study. The results are displayed in tables to emphasize the specific objectives this study set out to accomplish.

Extent of Use of Multimedia Instructional Materials in Television, LCD/LED Projector, Laptop, and WideScreen/Panaboard

Table 1

Extent of Use of Multimedia Instructional Materials in terms of Television

Items	Mean	Interpretation

1.	The teachers present pictures, graphics, and other visual materials on the television.	4.23	Very Great Extent
2.	The teachers show related and educational videos on television.	4.29	Very Great Extent
3.	The teachers prepare, demonstrate, and present their lessons via TV presentations.	4.28	Very Great Extent
4.	The teachers prepare drills, exercises, and activities using the TV.	4.02	Great Extent
5.	The teachers present audio clips, PowerPoint, and other presentations on the television.	4.20	Very Great Extent
6.	The teachers allow the pupils to watch television shows and presentations on the classroom television during class and break time.	3.45	Great Extent
7.	The teachers present and project tests, quizzes, and assignments using the TV.	4.26	Very Great Extent
8.	The teachers discuss and explain the lesson using the TV.	4.34	Very Great Extent
9.	The teachers give instructions to the pupils using the TV.	4.17	Great Extent
10.	The teachers connect their laptops and cellphones to the television.	4.31	Very Great Extent
Overall Mean		**4.16**	**Great Extent**

Table 1 presents the extent of use of multimedia instructional materials in terms of television. The results show an overall mean of 4.16, interpreted as extensive, indicating that television is widely used as an instructional tool in the teaching-learning process. Specifically, teachers frequently connect laptops and cellphones to the television, show educational videos, prepare drills and activities, present tests and assignments, and display pictures, graphics, audio clips, and PowerPoint presentations. These findings suggest that television is primarily utilized to support lesson delivery and enhance learners' understanding through visual and audio aids.

Among the indicators, the highest mean of 4.34 was obtained in the item where teachers discuss and explain lessons using television, highlighting its strong role in direct instruction. In contrast, the lowest mean of 3.45 was observed in allowing pupils to watch television shows and presentations during break time, indicating limited non-instructional use. Overall, the results imply that television is mainly used for academic purposes, with teachers maximizing its function as a teaching aid while only minimally extending its use to recreational viewing during break periods.

Table 2

Extent of Use of Multimedia Instructional Materials in terms of LED Projector

Items		Mean	Interpretation
1.	The teachers present pictures, graphics, and other visual materials through the LED projector.	4.10	Great Extent
2.	The teachers show educational and related videos on the projector.	4.06	Great Extent
3.	The teachers prepare, demonstrate, and present their lessons using their laptops connected to the projector.	4.29	Very Great Extent
4.	The teachers prepare drills, exercises, and activities using the projector.	3.80	Great Extent
5.	The teachers present audio clips, PowerPoint, and other presentations on the projector.	4.17	Great Extent
6.	The teachers allow the pupils to watch movies and presentations in class and during break time using the projector.	3.28	Great Extent
7.	The teachers present and project tests, quizzes, and assignments using the projector.	4.10	Great Extent
8.	The teachers discuss and explain the lesson using the projector.	4.23	Very Great Extent
9.	The teachers give instructions to the pupils using the projector.	3.98	Great Extent
10.	The teachers connect their laptops and other visual devices, such as cellphones, to the projector.	4.12	Great Extent
Overall Mean		**4.01**	**Great Extent**

Table 2 presents the extent of use of multimedia instructional materials in terms of LED projectors. The results show an overall mean of 4.01, interpreted as great extent, indicating that LED projectors are extensively used as instructional hardware in the classroom. The highest mean of 4.29 was recorded in the item where teachers prepare, demonstrate, and present lessons through laptop-based presentations, followed by the use of the projector for discussing and explaining lessons, both reflecting a very great extent of use. In contrast, the lowest mean of 3.28 was observed in allowing pupils to watch movies and presentations during class and break time, indicating that such non-instructional use is less common.

Overall, the findings imply that teachers primarily utilize LED projectors for structured lesson delivery and presentation of instructional content prepared on laptops. This suggests that the device is largely integrated into formal teaching strategies to enhance lesson clarity and visualization rather than for recreational or non-academic viewing, reinforcing its role as a key tool in supporting classroom instruction.

Table 3

Extent of Use of Multimedia Instructional Materials in terms of Laptop

Items	Mean	Interpretation
1. The teachers use laptops to deliver their instruction in class.	4.60	Very Great Extent
2. The teachers record pupils' grades using a laptop	4.74	Very Great Extent
3. The teachers prepare, demonstrate, and present their lessons through presentations using the laptop.	4.49	Very Great Extent
4. The teachers adapt an activity to students' individual needs using a laptop.	4.35	Very Great Extent
5. The teachers make handouts for students using a laptop.	4.21	Very Great Extent
6. The teachers create a test, quiz, or assignment using a laptop.	4.43	Very Great Extent
7. The teachers conduct research and lesson planning online.	4.44	Very Great Extent
8. The teachers communicate with the school administrator, co-teachers, parents, and pupils via email or the internet.	4.31	Very Great Extent
9. The teachers create webquests or incorporate the internet into lessons.	3.59	Great Extent
10. The teachers design, create, and produce visual materials such as graphics and pictures using the laptop.	4.58	Very Great Extent
Overall Mean	**4.37**	**Very Great Extent**

Table 3 shows the extent of use of multimedia instructional materials, including laptops. Looking closely at the table, the overall mean was 4.37, indicating that teachers use laptops to a very great extent.
The results further show that the remaining items were of a very great extent, except for the item that states: "the teachers create web quests or build the internet into a lesson," with a mean of 3.59, interpreted as a great extent.

The results imply that teacher used their laptop as electronic hardware in class to a very great extent. This was because most teachers had their own laptops and were encouraged to use multimedia instructional materials at school. Further, the item with the lowest mean indicated that teachers were not into creating web pages or engaging in online discussions. This was because internet access was not available to all teachers at the school. This was due to the slow connection and limited access that the school has subscribed to. Floright 2015 stated that the emergence of laptops, tablets, and Android devices has made the teaching-learning process more accessible and reduced teachers' burden in presenting their lessons.

Table 4

Extent of Use of Multimedia Instructional Materials in terms of Whiteboard/Panaboard

Items	Mean	Interpretation
1. The teachers prepare materials to use with an interactive whiteboard.	2.58	Slight Extent
2. The teachers discuss, explain, and present my lesson using the Panaboard.	2.72	Moderate Extent
3. The teachers use the Panaboard as an alternative to the blackboard.	2.70	Moderate Extent
4. The teachers present drills and exercises using the Panaboard.	2.48	Slight Extent
5. The teachers present videos and presentations using the Panaboard.	2.59	Slight Extent
6. The teachers show reading materials and conduct a reading activity using the Panaboard.	2.63	Moderate Extent
7. The teachers allow the pupils to work collaboratively and present reports using the Panaboard.	2.49	Slight Extent
8. The teachers give tests, quizzes, and assignments using the Panaboard.	2.62	Moderate Extent
9. The teachers give instructions to the pupils using the Panaboard.	2.63	Moderate Extent

	10. The teachers connect their laptops and other compatible devices to the Panaboard.	2.60	Moderate Extent
Overall Mean		2.60	Moderate Extent

Table 4 presents the extent of use of multimedia instructional materials in terms of whiteboard/Panaboard. The results revealed an overall mean of 2.60, interpreted as moderate extent, indicating that the Panaboard is seldom used in classroom instruction. Among the indicators, the highest mean of 2.72 was observed in the item where teachers discuss, explain, and present lessons using the Panaboard, while most of the remaining items—such as preparing materials for interactive use, presenting drills and exercises, showing videos and presentations, and allowing pupils to collaborate and present reports—were rated as slight extent.

Overall, the findings imply that the use of the Panaboard in instruction is limited and not fully maximized due to its limited availability in the school, as only one unit is accessible and its use is scheduled among teachers. In addition, its relatively complex features may also contribute to its minimal utilization, suggesting the need for adequate training and support to enhance teachers' competence and confidence in using the technology for more effective classroom instruction.

Level of Pupils Academic Performance

Table 5

Level of Pupils Academic Performance when they are taken as a group, according to the aforementioned variables

Variables	Categories	Mean	Interpretation
Sex	Male	81.73	Satisfactory
	Female	82.51	Satisfactory
Parents' Highest Educational Attainment	Lower	81.57	Satisfactory
	Higher	82.70	Satisfactory
Average Monthly Income	Lower	81.41	Satisfactory
	Higher	82.89	Satisfactory
Section	1	90.30	Outstanding
	2	86.07	Very Satisfactory
	3	82.67	Satisfactory
	4	80.52	Satisfactory
	5	80.31	Satisfactory
	6	79.71	Fairly Satisfactory
	7	79.16	Fairly Satisfactory
	8	77.33	Fairly Satisfactory

Table 5 presents the level of pupils' academic performance when grouped according to sex, parents' highest educational attainment, average monthly family income, and section. As to sex, both males and females obtained satisfactory performance, with mean scores of 81.73 and 82.51, respectively, indicating that females performed slightly better than males. Similarly, when grouped according to parents' educational attainment and family income, pupils in both categories achieved satisfactory performance, with slightly higher means observed among those whose parents had higher educational attainment and those belonging to higher-income groups.

In terms of section, academic performance varied more noticeably, with Section 1 showing outstanding performance, Section 2 very satisfactory, Sections 3–5 satisfactory, and Sections 6–8 fairly satisfactory. Overall, the results suggest that pupils consistently performed at a satisfactory level across sex, parental education, and income groups, while differences in performance were more evident across sections, indicating that class grouping may have a greater influence on academic outcomes.

Comparative Analysis in the Extent of Use of Multi-Media in Television, LCD/LED Projector, Laptop, and WideScreen/ Panaboard when grouped according to the Aforementioned variables

Table 6

Significant Difference in the Extent of Use of Multi-Media in Television when grouped according to the variables

Variables	Categories	Mean	z-value	Sig. Level	*p*-value	Interpretation
Sex	Male	4.05	-2.178	0.05	0.031	Significant

	Female	4.24				
Parents' Highest Educational Attainment	Lower	4.09	-1.353		0.178	Not Significant
	Higher	4.21				
Average Monthly Income	Lower	3.97	-4.274		0.000	Significant
	Higher	4.33				
	Source of Variation	**Sum of Square**	**Mean Square**	**F-Value**	***p*-value**	Interpretation
Section	Lower	.164	.164	0.481	0.489	Not Significant
	Higher	65.53	.342			
	Total	62.69				

Table 6 presents the differences in the extent of multimedia use on television across groups defined by sex, parents' highest educational attainment, average monthly family income, and section. Results showed that when grouped according to parents' educational attainment, there was no significant difference in television use (z = -1.353, p = 0.178), indicating that parental education does not influence pupils' exposure to television-based instruction. Likewise, when grouped by section, the result was also not significant (F = 0.481, p = 0.489), suggesting that television use remains consistent regardless of class grouping.

However, significant differences were found when pupils were grouped by sex and average monthly income. Sex showed a significant difference (z = -2.178, p = 0.031), with females reporting higher television use (M = 4.24) than males (M = 4.05). Similarly, average monthly income also showed a significant difference (z = -4.274, p = 0.000), where pupils from higher-income groups had greater television use (M = 4.33) compared to those from lower-income groups (M = 3.97). Overall, the findings imply that television use is influenced by sex and socioeconomic status, but not by parental education or section.

Table 7

Significant Difference in the Extent of Use of Multi-Media in LED Projector when grouped according to the variables

Variables	**Categories**	**Mean**	**z-value**	**Sig. Level**	***p*-value**	**Interpretation**
Sex	Male	3.97	-0.681	0.05	0.497	Not Significant
	Female	4.04				
Parents' Highest Educational Attainment	Lower	3.90	-2.045		0.042	Significant
	Higher	4.10				
Average Monthly Income	Lower	3.87	-2.879		0.004	Significant
	Higher	4.15				
	Source of Variation	Sum of Square	**Mean Square**	**F-Value**	***p*-value**	Interpretation
Section	Between Groups	1.77	1.77	3.993	0.047	Significant
	Within Groups	81.19	.444			
	Total	82.96				

Table 7 shows differences in the extent of multimedia use in LE projectors grouped and compared by the variables.

As shown in the table on the next page, the z-value for sex grouping is -0.681, with a *p*-value of 0.497. This means there is no significant difference in the extent of LED projector use across sex groups. Both males and females reported using the LED projector to the same extent.

For parents' highest educational attainment, the z-value is -2.045, and the p-value is 0.042. This means that when pupils were grouped according to parents' highest educational attainment, the lower level indicated difference extent of usage compared to the higher level.

When pupils were grouped by average monthly income, the z-value was -2.879, and the p-value was 0.004. This means there was a significant difference in the extent of LED projector use between higher- and lower-level parents' educational attainment.

In terms of the section, the F-value is 3.993, and the p-value is 0.047. The results indicate a significant difference in the extent of LED projector use across sections.

This further implies that each section indicated a different level of LED projector usage.

Table 8

Significant Difference in the Extent of Use of Multi-Media in Laptops when grouped according to the variables

Variables	Categories	Mean	z-value	Sig. Level	*p*-value	Interpretation
Sex	Male	4.35	-0.442	0.05	0.659	Not Significant
	Female	4.39				
Parents' Highest Educational Attainment	Lower	4.25	-2.739		0.007	Significant
	Higher	4.48				
Average Monthly Income	Lower	4.21	-3.899		0.000	Significant
	Higher	4.53				
	Source of Variation	Sum of Square	**Mean Square**	**F-Value**	***p*-value**	Interpretation
Section	Between Groups	.470	.470	1.390	0.240	Not Significant
	Within Groups	61.81	.338			
	Total	62.28				

Table 8 presents the differences in the extent of multimedia use on laptops across variables such as sex, parents' highest educational attainment, average monthly family income, and section. Results showed that when grouped by sex, there was no significant difference in laptop use ($z = -0.442$, $p = 0.659$), indicating that males and females have similar levels of exposure and utilization. Likewise, when grouped by section, no significant difference was found ($F = 1.390$, $p = 0.240$), suggesting that laptop use is generally consistent across class groupings.

However, significant differences were found in terms of parents' highest educational attainment ($z = -2.739$, $p = 0.007$) and average monthly family income ($z = -3.899$, $p = 0.000$), indicating that socioeconomic factors influence the extent of laptop use, with pupils from higher educational and income backgrounds showing greater utilization. These findings imply that access to and familiarity with laptops may be shaped more by home resources than by school grouping. Overall, the results also suggest that pupils show interest and motivation in using laptops, and increased access to such devices may enhance their engagement in learning and support the development of digital skills needed for academic tasks.

Table 9

Significant Difference on the Extent of Use of Multi-Media in Whiteboard/Panaboard when grouped according to the variables

Variables	Categories	Mean	z-value	Sig. Level	*p*-value	Interpretation
Sex	Male	2.66	0.790	0.05	0.431	Not Significant
	Female	2.55				
Parents' Highest Educational Attainment	Lower	2.62	0.228		0.820	Not Significant
	Higher	2.58				
Average Monthly Income	Lower	2.53	-0.948		0.345	Not Significant
	Higher	2.67				
	Source of Variation	Sum of Square	**Mean Square**	**F-Value**	***p*-value**	Interpretation
Section	Between Groups	8.51	8.58	9.426	0.002	Significant
	Within Groups	166.72	.911			
	Total	175.31				

Table 9 shows the comparative analysis of the extent of multimedia use in the panaboard when grouped by variables. Results revealed that when grouped according to sex, the z-value of 0.790 and p-value of 0.431 indicate no significant difference,

implying that male and female pupils experience similar exposure to panaboard use. Likewise, parents' highest educational attainment (z = 0.228, p = 0.820) and average monthly income (z = -0.948, p = 0.345) also showed no significant differences, suggesting that socioeconomic background does not influence the extent of panaboard utilization, and that its use is consistently applied across these groups. However, when grouped by section, the F-value of 9.426 with a p-value of 0.002 indicates a significant difference, implying that panaboard usage varies significantly across sections, which may be attributed to differences in classroom resources, teacher practices, or availability of instructional equipment per section.

Table 10

Significant Difference in the level of pupils' academic performance when grouped according to the aforementioned variables

Variables	Categories	Mean	z-value	Sig. Level	*p*-value	Interpretation
Sex	Male	81.73	-1.113	0.05	0.267	Not Significant
	Female	82.51				
Parents' Highest Educational Attainment	Lower	81.57	-1.613			
	Higher	82.70			0.102	Not Significant
Average Monthly Income	Lower	81.41	-2.137		0.034	Significant
	Higher	82.89				
	Source of Variation	Sum of Square	**Mean Square**	**F-Value**	***p*-value**	Interpretation
Section	Between Groups	3019.86	431.41	65.62	0.000	Significant
	Within Groups	1163.55	6.57			
	Total	4183.41				

Table 10 presents a comparative analysis of pupils' academic performance by the aforementioned variables.

As shown in the table, when pupils were grouped by sex and parents' highest educational attainment, the z-values were -1.113 and -1.6, respectively, with p-values of 0.267 and 0.102. The results indicate that there is no significant difference in pupils' academic performance across sex and parents' highest educational attainment.

For average monthly income, the z-value was -2.137, and the p-value was 0.034. This indicates a significant difference in pupils' academic performance across groups based on average family monthly income. The results indicated that pupils with higher average monthly income have higher academic performance than those with lower average monthly income.

Relational Analysis of the extent of use of multi-media instructional materials and the level of pupils' academic performance

Table 11

Relationship between the extent of use of multi-media instructional materials and the level of pupils' academic performance

Correlates	r	Sig. Level	*p*-value	Interpretation
Extent of use of multimedia instructional materials Level of Performance	0.123	0.05	0.089	Not Significant

Table 11 shows the relationship between the extent of use of multimedia instructional materials and pupils' academic performance. As shown in the table, there was no significant relationship between the extent of use of multimedia instructional materials and academic performance. It has an r-value of 0.123 with a *p*-value of 0.089.

The results imply that the extent of use of multimedia instructional materials does not affect pupils' academic performance. Further, it indicated that these electronic devices, such as televisions, panaboard laptops, and LED projectors, do not affect pupils' academic performance. Pupils' performance in class is not related to the instructional materials the teacher uses.

CONCLUSION

The study primarily determined the use of multimedia instructional materials in relation to the academic performance of Grade 6 pupils at Andres Bonifacio Elementary School II. Findings revealed that most respondents were female, with parents generally

having higher educational attainment and higher monthly income, and many pupils coming from upper sections. The extent of use of multimedia instructional materials was generally extensive for television, LED projector, and laptop, while whiteboard/panaboard use was only moderate to slight. When grouped according to sex, parents' educational attainment, income, and section, variations in the extent of use were observed, with significant differences found in certain groupings, particularly for television, LED projector, laptop, and whiteboard/panaboard. Pupils' academic performance was generally satisfactory, with no significant differences when grouped by sex or parents' educational attainment, but differences were noted across income level and section. However, no significant relationship was found between the extent of multimedia use and pupils' academic performance. It was concluded that while multimedia instructional materials were widely utilized by teachers and varied across groups, their use did not directly affect pupils' academic performance, which remained influenced more by section and income-related factors.

RECOMMENDATIONS

Based on the findings of the study, several recommendations were advanced. The Schools Division Superintendent and Education Program Supervisors in Bacolod City are encouraged to conduct regular monitoring and evaluation on the utilization of multimedia instructional materials to support the effective integration of technology in teaching and learning. Barangay officials, as stakeholders, are urged to actively participate in parent-teacher conferences and help allocate funds for the procurement of needed multimedia equipment. School principals are likewise advised to design programs that enhance pupils' academic performance through the integration of multimedia tools in classroom instruction. The ICT Coordinator and teachers are recommended to continuously assess and improve their use of multimedia instructional materials by adapting new technologies. Parents are encouraged to be more supportive and participative in school activities, while pupils are advised to become more familiar with various multimedia instructional materials to enhance their awareness and learning experience.

Conflict of Interest

The author confirms that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

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