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Beyond The Screen: The Impact of Instructional Media Integration on Critical Thinking Skills and Academic Achievement Among High School Learners

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Abstract:

This study examined instructional media integration and perceived learner outcomes at Bugang National High School, Division of Bohol, during School Year 2025–2026 as a basis for a multimedia-enhanced instructional framework. A descriptive-correlational design involved 18 teachers and 50 high school learners. A researcher-developed, literature-informed questionnaire gathered respondent profiles and five-point agreement ratings of instructional media integration and learner outcomes. Frequencies, percentages, weighted means, and Pearson correlation were used in the reported analysis. Learners were from Grades 7–10, with Grades 7 and 8 comprising 62%; 56% were female, and 74% accessed academic resources through smartphones with mobile data. Instructional media integration was generally rated Agree across media types, frequency and duration, instructional strategies, alignment with objectives, and learner engagement. The detailed tables indicated favorable perceived outcomes, with critical thinking and motivation and engagement rated Strongly Agree. The manuscript reported a positive association between instructional media integration and learner outcomes ($r = .31$, $df = 66$, $p = .01$). This association does not establish that media integration caused improvements or that questionnaire ratings represent independently measured achievement gains. The proposed framework combines multimedia components, instructional design, delivery, and implementation, supported by an implementation scheme and five sample learning activities. These materials are proposed applications of the findings; their effectiveness was not evaluated in the reported study.

Keywords: instructional media integration; learner outcomes; critical thinking skills; academic achievement; multimedia instruction; descriptive-correlational design

Introduction

The rapid advancement of instructional technology has significantly reshaped contemporary educational practices, particularly in secondary education. In the 21st century, classrooms are increasingly supported by multimedia presentations, interactive simulations, digital assessment platforms, and collaborative online tools. These technological developments have transformed traditional teaching–learning environments by enabling teachers to present lesson content in more dynamic and engaging ways. Instructional media—such as instructional videos, digital presentations, animations, simulations, and online learning platforms—are no longer viewed merely as supplementary teaching aids but have become important components of effective instructional delivery. In the Philippine educational context, the Department of Education (DepEd) continues to strengthen digital transformation initiatives aligned with the MATATAG Agenda and the K to 12 Curriculum reforms, which emphasize learner-centered instruction, improved learning outcomes, and the development of higher-order thinking skills necessary for learners to thrive in a rapidly changing world.

Instructional media integration refers to the purposeful use of multimedia resources and digital tools within structured teaching strategies to support meaningful learning experiences. By integrating instructional media, teachers can present lesson concepts in visual, auditory, and interactive formats that make complex ideas easier for learners to understand. Instructional videos, animations, and interactive simulations can illustrate abstract concepts and real-life applications that may be difficult to explain using traditional lecture-based methods. When instructional media are integrated effectively, learners are encouraged to participate actively in discussions, analyze information, and explore lesson concepts through various forms of engagement. This shift from passive reception of information to active participation allows learners to develop deeper understanding of lesson content and promotes more meaningful learning experiences.

The development of critical thinking skills remains one of the primary goals of secondary education. Critical thinking involves the ability to analyze information, evaluate evidence, interpret ideas, and apply logical reasoning in solving problems. In today's information-rich environment, learners are expected not only to acquire knowledge but also to examine and evaluate the information they encounter. Instructional media can support this process by presenting learners with authentic learning materials, multimedia examples, and problem-solving activities that encourage analytical thinking. Through digital learning resources and interactive materials, learners have opportunities to examine information from multiple perspectives, evaluate ideas, and develop reasoned conclusions.

In the Philippine educational setting, the integration of digital instructional tools has expanded significantly, particularly following the shift toward technology-supported learning modalities during and after the COVID-19 pandemic. Many secondary schools have adopted multimedia presentations, digital modules, online quizzes, and collaborative learning platforms to support classroom instruction. These technological resources have provided teachers with additional tools to enrich instructional delivery and create interactive learning experiences. However, despite the increasing use of digital instructional tools, there remains limited localized research on whether integrating instructional media significantly contributes to the development of learners' critical thinking skills and academic achievement in secondary education.

Furthermore, the integration of instructional media supports the goals of the Philippine Professional Standards for Teachers (PPST), which encourage the effective use of information and communication technology to enhance teaching and learning. Teachers are expected to utilize digital tools and

instructional resources that promote meaningful learning experiences and support the development of higher-order thinking skills among learners. Nevertheless, the effectiveness of instructional media depends largely on how these tools are integrated into instructional practices. Simply introducing technology into the classroom does not automatically improve learning outcomes; rather, it requires thoughtful planning, appropriate instructional strategies, and alignment with learning objectives.

Given these considerations, it is necessary to examine how the integration of instructional media influences learners' critical thinking skills and academic achievement in secondary education. By investigating the relationship among instructional media integration, critical thinking skills, and academic achievement in high school learners, this study aims to provide evidence-based insights to guide teachers and school administrators in improving instructional practices and strengthening learning outcomes in the classroom.

The theoretical foundation of this study is anchored in multiple interrelated learning theories that explain how multimedia environments affect cognitive processing and knowledge construction. A primary theoretical pillar is Mayer's Cognitive Theory of Multimedia Learning. Mayer posits that meaningful learning occurs when learners engage in active cognitive processing through dual channels—visual and auditory. According to this theory, learners select relevant information from multimedia inputs, organize it into coherent mental representations, and integrate it with prior knowledge stored in long-term memory.

Multimedia instruction enhances comprehension when it follows evidence-based design principles, such as coherence (removing extraneous material), signaling (highlighting essential information), and modality (balancing visual and auditory inputs). In high school classrooms, these principles are particularly relevant when presenting abstract concepts in Science, complex problem-solving steps in Mathematics, or analytical texts in English and Social Studies. Properly designed multimedia materials can reduce misconceptions, enhance conceptual clarity, and promote retention. However, if multimedia resources are poorly structured or overloaded with redundant information, they may increase cognitive strain and impair learning outcomes. This view is further supported by Schindler [1], who emphasized that technology-supported instruction can improve learner engagement and understanding when multimedia resources are used meaningfully, and by Hattie [2], who noted that clear and well-structured instructional approaches strengthen comprehension and learning performance.

The study is further grounded in Constructivist Learning Theory, which emphasizes that learners actively construct knowledge through interaction with their environment. Piaget's perspective highlights the processes of assimilation and accommodation, whereby learners modify cognitive schemas based on new experiences. Vygotsky extends this perspective by emphasizing the social dimension of learning, particularly through scaffolding within the Zone of Proximal Development. Instructional media tools align naturally with constructivist principles when they promote inquiry-based exploration and collaborative problem-solving. Interactive simulations allow learners to test hypotheses, manipulate variables, and observe outcomes in real time. Digital discussion platforms enable learners to articulate reasoning, challenge assumptions, and co-construct understanding with peers. In this way, multimedia-enhanced instruction fosters active engagement rather than passive reception. When high school learners interact meaningfully with digital content, they are more likely to develop analytical reasoning and reflective thinking skills—core components of critical thinking. This view is further supported by Bond, who emphasized that student engagement in technology-rich learning environments is strengthened when learners actively participate, interact, and construct meaning, and by Hattie, who noted that learning becomes more effective when students are deeply involved in thinking, discussion, and visible meaning-making processes.

Complementing multimedia learning theory is Cognitive Load Theory, originally developed by Sweller and continuously refined in contemporary instructional research. This theory emphasizes that

working memory has limited capacity and that instructional effectiveness depends on managing cognitive load appropriately. Cognitive load is categorized into intrinsic load (complexity inherent in the content), extraneous load (imposed by poor design), and germane load (mental effort devoted to schema construction). Instructional media integration can reduce intrinsic load by segmenting information and presenting it through integrated visual-verbal formats. For example, animated demonstrations of chemical reactions or geometric transformations can make abstract processes more accessible. At the same time, excessive animations, distracting transitions, or multitasking demands may increase extraneous load, leading to fragmented attention. For high school learners who are frequently exposed to multiple digital stimuli, understanding cognitive load principles is essential to ensure that instructional media enhances rather than overwhelms cognitive processing. Effective multimedia integration optimizes germane load, thereby strengthening understanding and academic performance. This perspective is echoed in recent instructional research. Sweller [3] highlighted the need to reduce unnecessary cognitive burden in learning tasks, whereas Mayer [4] pointed out that carefully designed multimedia can support more efficient processing of complex information and prevent overload.

Additionally, Experiential Learning Theory, developed by Kolb, strengthens the rationale for multimedia integration. Kolb describes learning as a cyclical process involving concrete experience, reflective observation, abstract conceptualization, and active experimentation. Multimedia tools provide opportunities for immersive experiences, such as virtual laboratories, real-world case simulations, and interactive scenario-based learning tasks. Through guided reflection and conceptual analysis, learners transform these experiences into structured knowledge. For example, a virtual environmental simulation may allow students to analyze ecological systems and predict outcomes in response to changes in variables. Such experiential engagement promotes deeper cognitive processing, enhances retention, and supports transfer of knowledge to novel contexts. In secondary education, where learners are expected to apply theoretical knowledge in practical scenarios, the integration of experiential multimedia can significantly strengthen both critical thinking and academic performance. Supporting this idea, Kolb and Kolb emphasized that meaningful learning becomes stronger when students actively engage in experience, reflection, and application, while UNESCO [5] noted that technology-supported learning environments can expand opportunities for authentic, participatory, and context-based learning experiences.

The development of critical thinking skills is explicitly informed by Facione's framework [6], which identifies interpretation, analysis, evaluation, inference, explanation, and self-regulation as essential cognitive competencies. Instructional media integration provides structured opportunities to cultivate these skills. Multimedia case studies require interpretation of information; interactive debates foster evaluation of arguments; digital data analysis tools encourage inference and explanation; and reflective digital journals promote self-regulation. When multimedia tasks are intentionally designed to challenge learners cognitively, they extend beyond memorization toward analytical reasoning. High school education aims to prepare learners for higher education and for complex participation in society, both of which demand critical thinking. Therefore, examining the relationship between multimedia integration and these cognitive skills is both academically and socially significant. Reinforcing this perspective, Schindler explained that technology-supported learning can strengthen higher-order thinking when learners are actively engaged in analysis and reflection, while Hattie emphasized that instructional approaches promoting visible thinking and deep processing can improve learners' reasoning and academic performance.

Beyond theoretical grounding, this study is situated within Philippine educational policy frameworks that emphasize quality instruction, technological integration, and the development of higher-order thinking skills among learners. The Philippine education system recognizes the importance of preparing students for the demands of the 21st century by integrating digital resources and instructional technologies into classroom instruction. These policy directions support the use of

instructional media as an effective tool to improve learner engagement, strengthen analytical thinking, and enhance academic performance in secondary education.

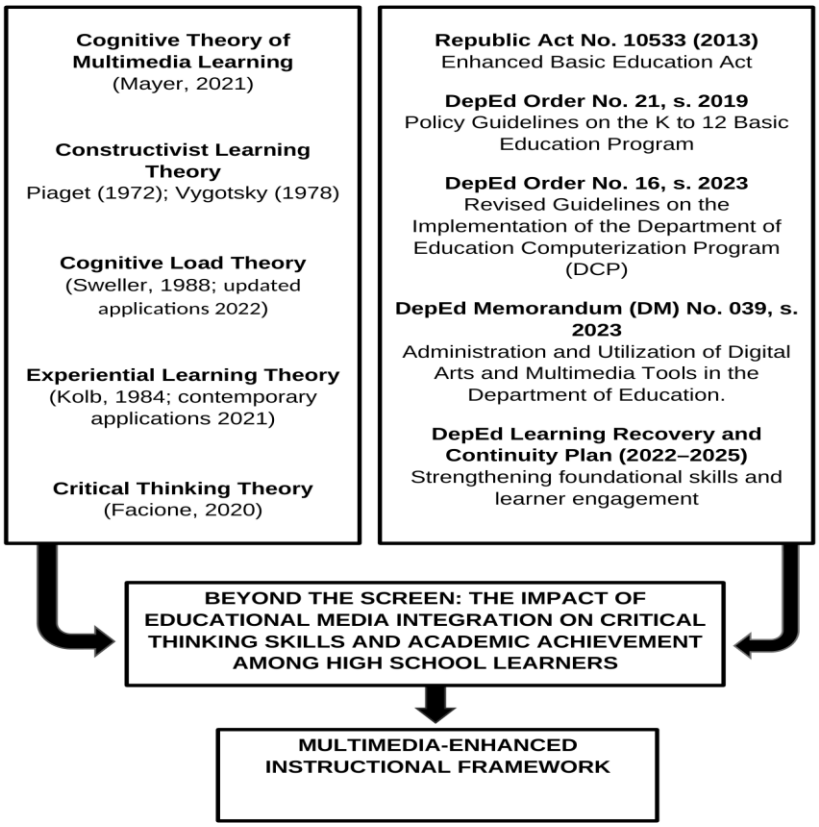


Figure 1. *Theoretical Framework of the Study*

Legal Bases

Republic Act No. 10533, also known as the Enhanced Basic Education Act of 2013, institutionalized the K to 12 Basic Education Program in the Philippines. This law introduced four key stages of learning, with Key Stage 3 covering Grades 7 to 10, which corresponds to Junior High School education. At this stage, learners are expected to develop higher-order thinking skills such as analysis, evaluation, and problem-solving. The curriculum emphasizes learner-centered instruction and contextualized learning experiences that help students deepen their understanding of lesson content. Instructional media integration supports these goals by enabling teachers to present information using multimedia tools that encourage active participation and critical analysis among learners.

Complementing this framework is DepEd Order No. 21, s. 2019, which provides policy guidelines for the implementation of the K to 12 Basic Education Program. This policy emphasizes developing essential competencies among learners, including critical thinking, communication, collaboration, and creativity. These competencies are particularly relevant for junior high school learners, who are expected to demonstrate a deeper understanding of academic concepts and apply their knowledge to solve real-world problems. Instructional media can support these objectives by providing interactive learning experiences that encourage learners to analyze information, interpret data, and participate actively in classroom discussions.

Another important policy supporting technology integration in Philippine schools is DepEd Order No. 16, s. 2023, which provides guidelines for the implementation of the DepEd Computerization Program (DCP). This program aims to enhance the delivery of quality education by providing schools with digital equipment and technological resources that support teaching and learning. Through the DepEd Computerization Program, schools are equipped with computers, projectors, and other multimedia tools, enabling teachers to integrate instructional media effectively into classroom

instruction. These technological resources enable teachers to design interactive lessons and multimedia presentations that can help learners understand complex concepts and improve their engagement in learning activities.

Similarly, DepEd Memorandum No. 039, s. 2023 highlights the administration and utilization of digital arts and multimedia tools within the Department of Education. This memorandum encourages schools and educators to maximize the use of multimedia technologies to enhance instructional delivery and develop learners' digital literacy skills. The integration of multimedia tools in classroom instruction allows learners to explore visual and interactive learning materials that can strengthen their analytical thinking and improve their ability to interpret information from different sources. Through multimedia-supported instruction, learners have opportunities to engage in collaborative learning activities and to express their ideas creatively using digital platforms.

In addition, the DepEd Learning Recovery and Continuity Plan (2022–2025) emphasizes the importance of strengthening foundational learning skills and improving learner engagement following the disruptions caused by the COVID-19 pandemic. One of the strategies highlighted in this plan is the use of digital tools and instructional media to support effective teaching and learning. Multimedia resources, digital learning materials, and technology-supported instruction can help teachers reinforce lesson concepts, address learning gaps, and sustain learners' interest in academic activities.

Synthesizing these policy foundations, the conceptual framework of this study posits that instructional media integration is the independent variable influencing two major learning outcomes among high school learners in Key Stage 3: critical thinking skills and academic achievement. The framework assumes that when instructional media are integrated systematically and aligned with curriculum objectives, they create engaging learning environments that encourage learners to analyze information, participate actively in classroom activities, and develop a deeper understanding of lesson concepts.

However, the framework also recognizes that the effectiveness of instructional media integration depends on several contextual factors, including instructional design, teacher competence in using multimedia tools, learner motivation, and the overall classroom environment. Instructional media alone do not guarantee improved learning outcomes; rather, their impact depends on purposeful integration and guided facilitation by teachers. Therefore, this study examines the integration of structured instructional media into classroom instruction and its relationship to learners' critical thinking development and academic achievement at Bugang National High School.

THE PROBLEM

Statement of the Problem

This study aimed to examine the impact of instructional media integration on improvement of critical thinking skills and academic achievement among high school learners in Bugang National High School in the Division of Bohol during the School Year 2025–2026 as basis for developing a multimedia-enhanced instructional framework.

This study specifically sought to answer the following questions:

1. What is the demographic profile of the following:

1.1 teachers'

1.1.1 age and gender,

1.1.2 highest educational attainment,

1.1.3 length of teaching experience,

1.1.4 subject area specialization,

1.1.5 access to technology, and

1.1.6 trainings or seminars attended related to ICT integration, multimedia instruction, or technology-enhanced pedagogy;

1.2 learners'

1.2.1 age and gender,

1.2.2 grade level,

1.2.3 academic strand, and

1.2.4 access to digital devices and internet connectivity for academic purposes?

2. As perceived by respondent groups what is the extent of instructional media integration in teaching learning as to:

2.1 types of instructional media utilized,

2.2 frequency and duration of multimedia use in classroom instruction,

2.3 instructional strategies employed,

2.4 alignment of multimedia tools with lesson objectives, and

2.5 level of learner engagement during multimedia-enhanced lessons?

3. What is the level of learner outcomes in relation to instructional media integration in terms of:

3.1 critical thinking skills,

3.2 academic achievement,

3.3 motivation and engagement,

3.4 collaboration and communication skills during multimedia-based tasks, and

3.5 learners' confidence in handling complex academic tasks?

4. Is there a significant relationship between the level of instructional media integration and learner outcomes?

5. What best practices in using instructional media are observed in the classroom?

6. Based on the findings, what instructional media integration framework can be designed?

Null Hypothesis

Ho: There is no significant relationship between the level of educational media integration and learner outcomes

Methodology

Research Design

The study used a quantitative descriptive-correlational design to describe instructional media integration and learner outcomes and examine their association without manipulating classroom conditions [7]. Structured questionnaires provided teachers' and learners' perceptions. The source also mentions academic records, grades, achievement tests, task completion, and competency mastery, but the supplied results report agreement ratings rather than separate record-based outcome datasets.

Flow of the Study

The supplied Input–Process–Output model organizes respondent profiles, instructional media integration, learner outcomes, their relationship, and classroom best practices as inputs. The process includes descriptive survey, questionnaire formulation, data processing, statistical treatment, analysis and interpretation, and drawing conclusions and recommendations. The output is a framework for multimedia-enhanced critical thinking development (Figure 2).

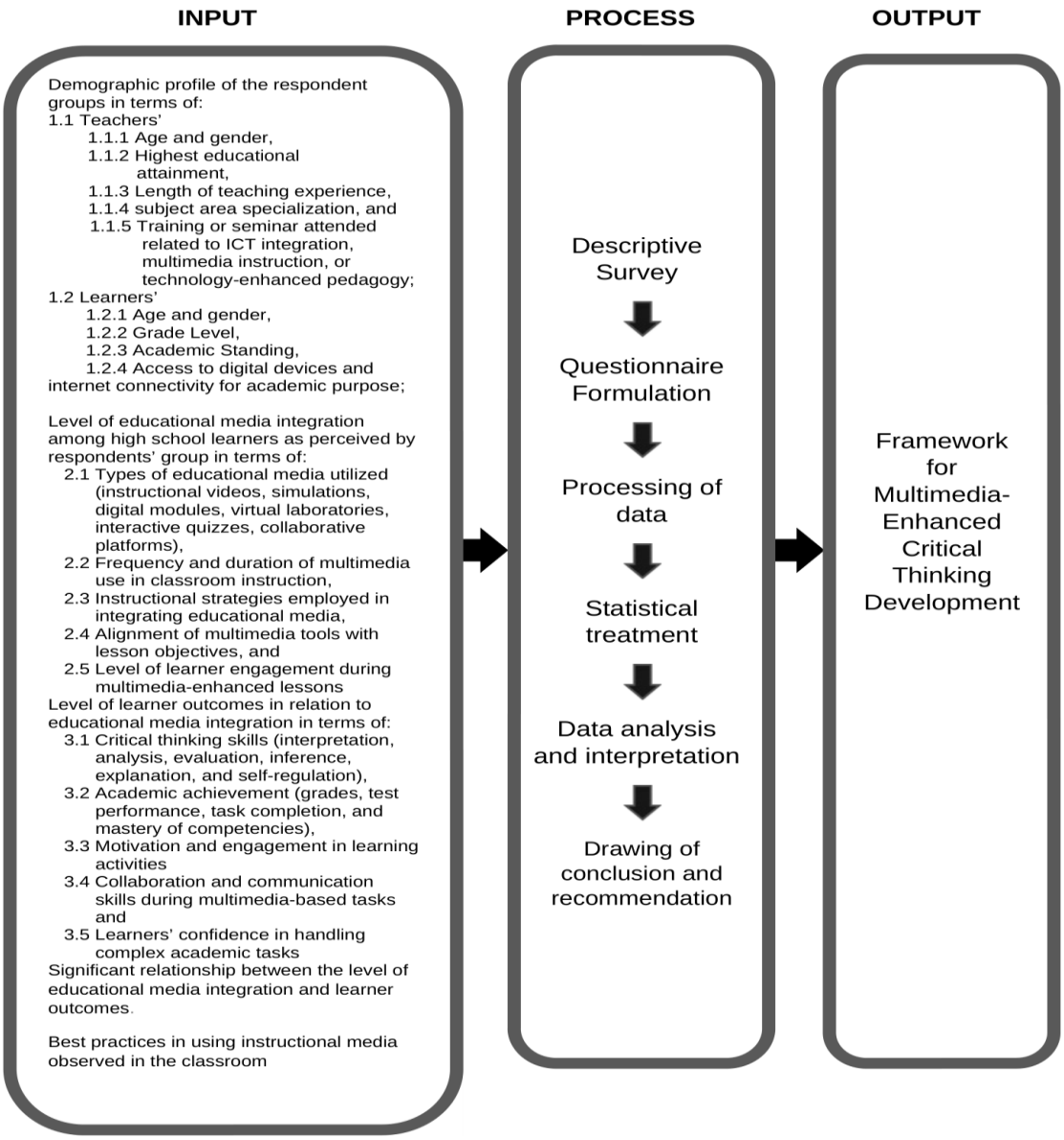


Figure 2. *Input–Process–Output Model and Flow of the Study*

Research Environment

Bugang National High School is a public secondary school located in Barangay Bugang, Municipality of San Miguel, Province of Bohol, Philippines. The school is situated in the interior northeastern part of the municipality and serves as one of the main providers of secondary education for learners coming from Barangay Bugang and neighboring communities. The surrounding environment reflects a predominantly rural setting where agriculture and small-scale local businesses are the primary sources of livelihood for many residents. Despite its rural location, the school continues to adapt to the changing demands of modern education by integrating innovative teaching strategies and technology-supported instructional practices to enhance the learning experience of its students.

Barangay Bugang is one of the barangays under the Municipality of San Miguel, which belongs to the Schools Division of Bohol under the Department of Education (DepEd). The community surrounding the school is composed of families from diverse socio-economic backgrounds who rely primarily on farming, small trade, and community-based occupations for their daily income. These socio-economic conditions influence the educational experiences of learners, particularly in terms of access to digital devices, internet connectivity, and other technological resources that support learning. Nevertheless, Bugang National High School continues to provide accessible and quality

secondary education aligned with the K to 12 Basic Education Program implemented by the Department of Education.

Bugang National High School was officially established through House Bill No. 2470 during the 12th Congress of the Philippines and is recognized under the official School ID 302898 within the District of San Miguel. Since its establishment, the school has played a vital role in providing educational opportunities for learners in the municipality and surrounding areas. The institution is led by Dr. Liza V. Orevillo, the school principal, who oversees the implementation of academic programs, teacher development initiatives, and school improvement activities to enhance the quality of instruction and student learning outcomes.

At present, Bugang National High School comprises 19 teaching personnel, one school principal, and five non-teaching staff members who work collaboratively to ensure the effective delivery of educational services. The teaching staff is responsible not only for classroom instruction but also for organizing co-curricular and extra-curricular activities that contribute to the holistic development of learners. Teachers regularly participate in professional development activities, training programs, and seminars conducted by the Department of Education to strengthen their teaching competencies and improve instructional strategies.

The school has also demonstrated achievements in various academic and non-academic competitions. One of its notable accomplishments was during the Bohol Provincial Athletic Meet in December 2025, where the school's athletes, known as the BNHS Warriors, earned several gold medals in Wushu, Pencak Silat, and Wrestling. In addition to sports achievements, Bugang National High School has also gained recognition in campus journalism. During the Division Schools Press Conference in November 2025, two students successfully placed among the Top 10 in Sports News Writing and Editorial Cartooning, highlighting the school's commitment to developing learners' communication and creative skills.

In the classroom, teachers at Bugang National High School have gradually incorporated educational media to support lesson delivery and learner engagement. Multimedia tools such as instructional videos, digital slide presentations, animations, and interactive materials are sometimes used to clarify difficult concepts and make lessons more engaging for students. These instructional resources allow teachers to present information through multiple formats, enabling learners to visualize complex ideas, observe processes, and connect theoretical concepts to real-life situations. When used effectively, such multimedia tools can enhance students' understanding of subject content and encourage deeper analysis and interpretation of information.

In addition to instructional practices, Bugang National High School fosters a collaborative learning environment supported by the involvement of administrators, teachers, parents, and community members. School leaders provide guidance on implementing educational programs and initiatives to improve learner outcomes. Teachers work collectively to plan lessons and share instructional resources that respond to their students' needs. Meanwhile, parents and guardians support learners' academic progress by encouraging positive learning habits and providing assistance when necessary. This cooperative relationship among school stakeholders strengthens the educational environment and promotes a culture of shared responsibility in supporting learners' academic development.

Despite the opportunities created by the integration of educational media, the use of technology in instruction also presents certain challenges within the school environment. Variations in access to digital devices, differences in learners' technological skills, and occasional limitations in internet connectivity may influence how multimedia resources are utilized during classroom instruction. Additionally, teachers must carefully balance the use of technology with traditional teaching approaches to ensure that multimedia tools serve as effective learning aids rather than distractions. Understanding these contextual realities is essential to examining how the integration of educational media influences learners' critical thinking skills and academic performance.

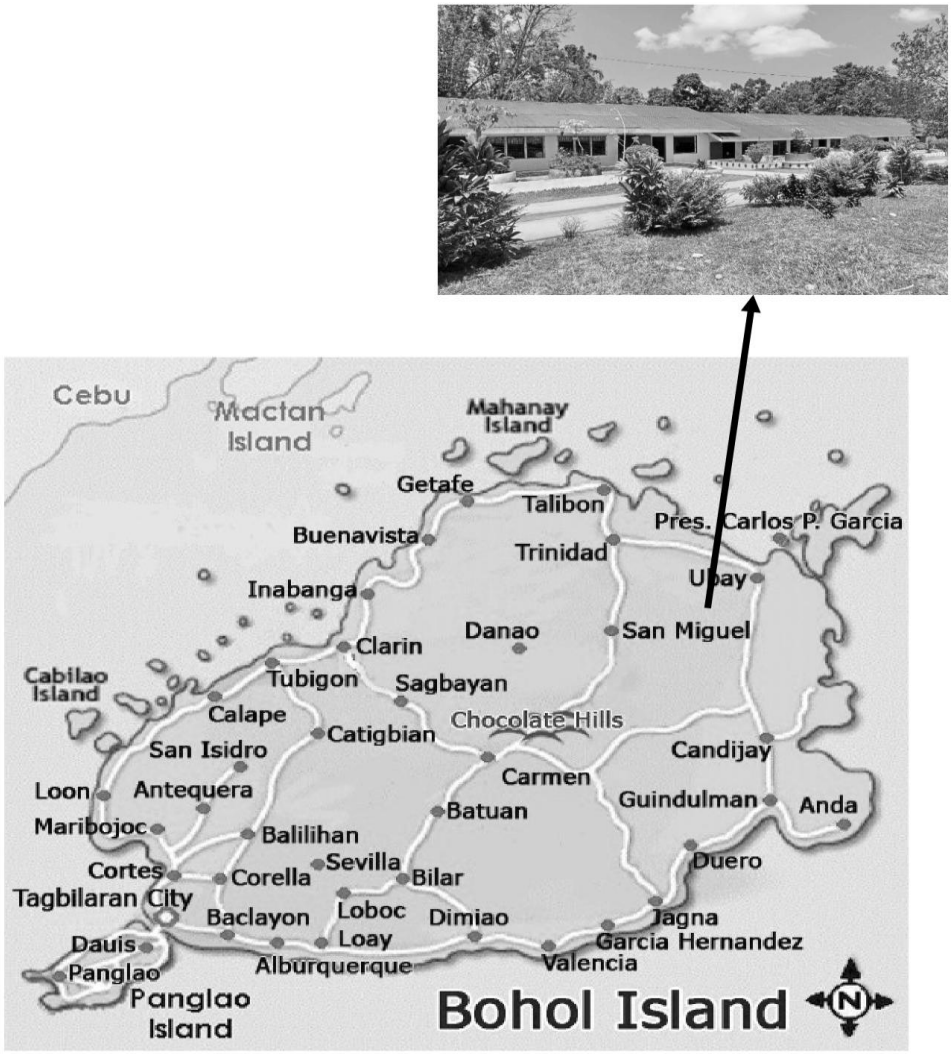


Figure 3. *Research Environment Map and School Photograph*

Respondents and Sampling

Respondents comprised 18 secondary teachers (16 female and 2 male) and 50 selected high school learners of Bugang National High School during School Year 2025–2026, for a total of 68. Teachers provided perceptions of instructional media practices, and learners described their experiences with multimedia-supported instruction. The source describes inclusion of the teaching staff and a selected learner group.

Table 1. *Distribution of Respondents*

Respondent Group	Number of Respondents	%
Teachers	18	26.47%
Learners	50	73.53%
Total	68	100%

Research Instrument

The research used a researcher-developed questionnaire adapted from established studies on multimedia learning and technology integration in education, particularly Mayer on Multimedia Learning Theory and Schindler on technology integration and student engagement. These instruments guided the development of the questionnaire to ensure that the items reflect relevant indicators of educational media use, learner engagement, and academic outcomes. The questionnaire was

distributed to both teachers and learners at Bugang National High School during the School Year 2025–2026, with slight modifications to align with the objectives and variables of the present study.

The questionnaire consisted of three main sections. The first section gathered the demographic profile of the respondents. For teachers, the information collected included age, gender, highest educational attainment, length of teaching experience, subject area specialization, and training or seminars attended related to ICT integration, multimedia instruction, or technology-enhanced pedagogy. For learners, the data included age, gender, grade level, academic strand (if applicable), and access to digital devices and internet connectivity for academic purposes. This section provides background information necessary to describe the respondents and to understand possible variations in the use of educational media in instruction.

The second section measured the level of educational media integration in classroom instruction. The items in this section were adapted from the literature on multimedia learning and technology-enhanced instruction. Statements included the types of educational media utilized, such as instructional videos, multimedia presentations, digital modules, interactive quizzes, and collaborative learning platforms. It also examined the frequency and duration of multimedia use in classroom activities, the instructional strategies teachers used to integrate educational media, the alignment of multimedia resources with lesson objectives, and the level of learner engagement during multimedia-enhanced lessons.

The third section assessed learner outcomes related to educational media integration, with a particular focus on learners' critical thinking skills and academic achievement. The indicators used in this section were guided by frameworks on critical thinking and learning outcomes suggested by Facione and Mayer. These indicators included interpretation, analysis, evaluation, inference, explanation, and self-regulation as components of critical thinking, as well as measures of academic achievement such as grades, task completion, comprehension of lessons, and mastery of competencies. The section also included items related to learner motivation, engagement in multimedia-based learning activities, collaboration and communication during group tasks, and learners' confidence in handling complex academic tasks.

The questionnaire used a five-point Likert scale, ranging from Strongly Agree to Strongly Disagree, to measure respondents' perceptions of educational media integration and learner outcomes. Prior to the administration of the instrument, the questionnaire underwent content validation by educational experts and experienced teachers to ensure clarity, relevance, and alignment with the study's objectives. Necessary revisions were made based on their recommendations to improve the instrument's reliability and appropriateness for data collection.

Data Gathering and Ethics

Prior to conducting the study, the researcher obtained formal permission from the principal of Bugang National High School. A request letter outlining the research's purpose, objectives, and procedures was submitted to obtain authorization to conduct the study within the school. Upon approval, the researcher coordinated with the school administration and teachers on the schedule and procedures for distributing the research instruments.

Before the actual data collection, the respondents were informed about the nature and purpose of the research. Teachers and learners were assured that their participation in the study was voluntary and that the information they provided would be treated confidentially and anonymously. Learners were given clear explanations regarding the questionnaire to ensure that they understood each item before answering.

The researcher personally distributed the survey questionnaires to the respondents. The questionnaires for learners were administered during their scheduled class periods to ensure an organized and convenient data collection process. Meanwhile, the teacher respondents completed their

questionnaires during their available time, such as free periods or scheduled meetings. The researcher provided instructions and addressed any questions from respondents to ensure that responses were honest and accurate.

After the respondents completed the questionnaires, the researcher collected all the instruments and carefully checked them for completeness and accuracy. The responses were then coded, tabulated, and organized for data analysis. All information gathered from the respondents was handled with strict confidentiality and was used solely for the purpose of the research study.

Scoring and Data Analysis

Frequencies and percentages described respondent profiles. Weighted means summarized agreement ratings of instructional media integration and perceived outcomes. Pearson product–moment correlation examined the association between these constructs. The reported relationship was assessed at the .05 significance level. Higher questionnaire scores indicate stronger agreement with the supplied statements; they do not directly measure duration in minutes or achievement gains.

Table 2. *Source Scoring Procedure*

Weight	Range	Interpretation	Transmuted Rating
5	4.21–5.00	Strongly Agree	Highly Evident
4	3.41–4.20	Agree	Evident
3	2.61–3.40	Neutral	Moderately Evident
2	1.81–2.60	Disagree	Slightly Evident
1	1.00–1.80	Strongly Disagree	Not Evident

The Results tables retain the source's interpretation labels and equal-group Average columns. Because teacher and learner sample sizes differ (18 and 50), an equal average of group means is distinct from a respondent-weighted pooled mean. Reported SD columns are retained as supplied; arithmetic averages of item or group SDs are not composite-score or pooled respondent SDs.

Results and Discussion

Respondent Profiles

Table 3. *Age of Teachers*

Age (Years)	Frequency	Percentage
51-60	3	16.67%
41-50	5	27.78%
31-40	7	38.89%
21-30	3	16.67%
Total	18	100%
Average	39.94	
SD	10.23	

Seven teachers (38.89%) were aged 31–40, five (27.78%) were 41–50, and three each (16.67%) were 21–30 and 51–60.

Table 4. *Gender of Teachers*

Gender	Frequency	Percentage
Male	2	11.11%
Female	16	88.89%
Total	18	100%

Sixteen teachers (88.89%) were female and two (11.11%) were male.

Table 5. *Highest Educational Attainment of Teachers*

Educational Attainment	Frequency	Percentage
Doctorate (Graduate)	0	0%
Doctorate (Units)	2	11.11%
Master's Degree (Graduate)	5	27.78%
Master's Degree (Units)	11	61.11%
Bachelor's Degree	0	0%
Total	18	100%
Average	2.50	
SD	0.69	

Eleven teachers (61.11%) had master's degree units, five (27.78%) had completed a master's degree, and two (11.11%) had doctorate units.

Table 6. *Length of Teaching Experience of Teachers*

Years of Experience	Frequency	Percentage
More than 20 years	6	33.33%
16–20 years	4	22.22%
11–15 years	0	0%
6–10 years	7	38.89%
1–5 years	1	5.56%
Total	18	100%
Average	14.94	
SD	7.30	

Seven teachers (38.89%) had 6–10 years of experience, six (33.33%) had more than 20 years, four (22.22%) had 16–20 years, and one (5.56%) had 1–5 years.

Table 7. *Subject Area Specialization*

Subject Area Specialization	Frequency	Percentage
English	2	11.11%
Math	3	16.67%
Science	3	16.67%
Social Studies	2	11.11%
TLE / TVL	5	27.78%
ICT Computer	3	16.67%
Others	0	0%
Total	18	100%
Average	3.78	
SD	1.56	

TLE/TVL was the largest specialization group (5; 27.78%). Mathematics, Science, and ICT Computer each included three teachers (16.67%); English and Social Studies each included two (11.11%).

Table 8. *ICT-Related Training and Seminars*

Number of Trainings Attended	Frequency	Percentage
5 or more trainings	9	50%
3–4 trainings	5	27.78%
1–2 trainings	4	22.22%
None	0	0%
Total	18	100%
Average	3.28	
SD	0.83	

Nine teachers (50%) reported five or more trainings, five (27.78%) reported three or four, and four (22.22%) reported one or two.

Table 9. *Access to Technology for Instruction*

Access to Technology	Frequency	Percentage
School-provided laptop/computer	7	38.89%
Personal laptop/computer	6	33.33%
Projector/Smart TV	5	27.78%
Reliable internet connection in school	0	0%
Limited or no access to digital resources	0	0%
Total	18	100%

Seven teachers (38.89%) reported a school-provided laptop/computer, six (33.33%) a personal laptop/computer, and five (27.78%) a projector/Smart TV. The reliable school internet and limited/no-resource categories each had zero responses.

Table 10. *Age of Learners*

Age	Frequency	Percentage
16 above	3	6%
14-15	31	62%
12-13	16	32%
Total	50	100%
Average	10.95	
SD	1.07	

Thirty-one learners (62%) were aged 14–15, sixteen (32%) were 12–13, and three (6%) were in the source's "16 above" category.

Table 11. *Gender of Learners*

Gender	Frequency	Percentage
Male	22	44%
Female	28	56%
Total	50	100%

Twenty-eight learners (56%) were female and twenty-two (44%) were male.

Table 12. *Grade Level of Learners*

Grade Level	Frequency	Percentage
Grade 7	17	34%
Grade 8	14	28%
Grade 9	8	16%
Grade 10	11	22%
Grade 11	0	0%
Grade 12	0	0%
Total	50	100%
Average	8.26	
SD	1.16	

Grade 7 included 17 learners (34%), Grade 8 included 14 (28%), Grade 9 included eight (16%), and Grade 10 included eleven (22%). No Grade 11 or 12 respondents were reported.

Table 13. *Access to Digital Devices and Internet Connectivity*

Access to digital devices	Frequency	Percentage
Smartphone with mobile data	37	74%
Smartphone with Wi-Fi connection	4	8%
Tablet with internet connection	0	0%
Laptop or desktop computer with Wi-Fi connection	1	2%
Laptop or desktop computer using mobile data	0	0%
School computer with internet access	0	0%
Internet café or public Wi-Fi	2	4%
Shared device with family members	3	6%
Limited access to digital devices and internet	2	4%
No access to digital devices or internet for academic purposes	1	2%
Total	50	100%

Most learners used smartphones with mobile data (37; 74%). Four (8%) used smartphones with Wi-Fi, three (6%) shared devices, two each (4%) used public access or had limited access, and one each (2%) used a Wi-Fi-connected computer or had no access.

Types of Instructional Media Utilized

Table 14. *Types of Instructional Media Utilized*

Indicator	T WM	T SD	L WM	L SD	Avg WM	Avg SD	I
Instructional videos are used during classroom instruction.	4.00	1.05	3.96	1.13	3.98	1.09	Agree
Multimedia presentations are integrated into lessons.	3.78	1.08	3.92	1.07	3.85	1.08	Agree
Digital modules or online learning materials are used during lessons.	3.89	1.05	3.90	1.14	3.89	1.09	Agree
Interactive quizzes or digital assessments are used during lessons.	3.67	1.11	3.90	1.00	3.79	1.06	Agree
Collaborative platforms are used for learning activities.	3.67	1.29	3.76	1.07	3.72	1.18	Agree
Instructional media helps explain difficult lesson concepts.	4.00	1.20	4.02	1.10	4.01	1.15	Agree
Over-all Mean	3.83	1.13	3.91	1.09	3.87	1.11	Agree

Note. T = teachers; L = learners; Avg = source Average; WM = weighted mean; SD = source-reported standard deviation; I = source interpretation. Average entries are source-reported group summaries, not verified pooled statistics. Source Results legend: 4.50–5.00 = Strongly Agree; 3.50–4.49 = Agree; 2.50–3.49 = Neutral; 1.50–2.49 = Disagree; 1.00–1.49 = Strongly Disagree.

Table 14 reports teacher and learner means of 3.83 and 3.91, respectively, and a source-reported Average mean of 3.87 (Agree). These summarize questionnaire agreement with the listed indicators.

Frequency and Duration of Multimedia Use

Table 15. *Frequency and Duration of Multimedia Use*

Indicator	T WM	T SD	L WM	L SD	Avg WM	Avg SD	I
Instructional media is regularly used in classroom instruction.	3.89	1.05	3.86	1.13	3.87	1.09	Agree
Multimedia resources are integrated into different learning activities.	3.72	1.10	3.82	1.07	3.77	1.08	Agree
Digital materials are used to support lesson discussions.	3.83	1.26	3.90	1.17	3.87	1.21	Agree
Multimedia tools are used to reinforce lesson understanding.	3.72	0.93	3.86	1.10	3.79	1.01	Agree
Instructional media is used in several subjects across the curriculum.	3.61	1.30	3.72	1.08	3.67	1.19	Agree
Learners are frequently exposed to multimedia-based lessons.	3.56	1.21	3.78	1.08	3.67	1.15	Agree
Over-all Mean	3.72	1.14	3.82	1.10	3.77	1.12	Agree

Note. T = teachers; L = learners; Avg = source Average; WM = weighted mean; SD = source-reported standard deviation; I = source interpretation. Average entries are source-reported group summaries, not verified pooled statistics. Source Results legend: 4.50–5.00 = Strongly Agree; 3.50–4.49 = Agree; 2.50–3.49 = Neutral; 1.50–2.49 = Disagree; 1.00–1.49 = Strongly Disagree.

Table 15 reports teacher and learner means of 3.72 and 3.82, respectively, and a source-reported Average mean of 3.77 (Agree). These summarize questionnaire agreement with the listed indicators.

Instructional Strategies in Instructional Media Integration

Table 16. *Instructional Strategies in Instructional Media Integration*

Indicator	T WM	T SD	L WM	L SD	Avg WM	Avg SD	I
Multimedia tools help demonstrate real-life applications of lessons.	3.71	1.18	3.84	1.16	3.78	1.17	Agree
Instructional media supports collaborative learning activities.	3.50	1.26	3.68	1.23	3.59	1.25	Agree
Multimedia resources encourage active learner participation.	3.61	1.30	3.76	1.19	3.69	1.25	Agree
Digital tools help clarify complex lesson concepts.	3.56	1.22	3.69	1.21	3.63	1.22	Agree
Multimedia instruction enhances classroom discussions.	3.44	1.27	3.61	1.25	3.53	1.26	Agree
Instructional media supports differentiated instruction.	3.67	1.20	3.68	1.18	3.68	1.19	Agree
Over-all Mean	3.58	1.24	3.71	1.20	3.65	1.22	Agree

Note. T = teachers; L = learners; Avg = source Average; WM = weighted mean; SD = source-reported standard deviation; I = source interpretation. Average entries are source-reported group summaries, not verified pooled statistics. Source Results legend: 4.50–5.00 = Strongly Agree; 3.50–4.49 = Agree; 2.50–3.49 = Neutral; 1.50–2.49 = Disagree; 1.00–1.49 = Strongly Disagree.

Table 16 reports teacher and learner means of 3.58 and 3.71, respectively, and a source-reported Average mean of 3.65 (Agree). These summarize questionnaire agreement with the listed indicators.

Alignment of Multimedia Tools with Lesson Objectives

Table 17. *Alignment of Multimedia Tools with Lesson Objectives*

Indicator	T WM	T SD	L WM	L SD	Avg WM	Avg SD	I
Multimedia materials align with lesson objectives.	3.94	1.11	3.86	1.18	3.90	1.14	Agree
Educational videos support the intended learning outcomes.	3.67	1.19	3.84	1.13	3.75	1.16	Agree
Digital learning materials help achieve lesson competencies.	3.78	1.26	3.84	1.17	3.81	1.21	Agree
Multimedia tools are selected based on instructional goals.	3.56	1.25	3.78	1.11	3.67	1.18	Agree
Instructional media improves lesson delivery.	3.78	1.31	3.90	1.23	3.84	1.27	Agree
Multimedia integration strengthens lesson comprehension.	3.72	1.07	3.82	1.19	3.77	1.13	Agree
Over-all Mean	3.74	1.20	3.84	1.17	3.79	1.18	Agree

Note. T = teachers; L = learners; Avg = source Average; WM = weighted mean; SD = source-reported standard deviation; I = source interpretation. Average entries are source-reported group summaries, not verified pooled statistics. Source Results legend: 4.50–5.00 = Strongly Agree; 3.50–4.49 = Agree; 2.50–3.49 = Neutral; 1.50–2.49 = Disagree; 1.00–1.49 = Strongly Disagree.

Table 17 reports teacher and learner means of 3.74 and 3.84, respectively, and a source-reported Average mean of 3.79 (Agree). These summarize questionnaire agreement with the listed indicators.

Learner Engagement in Multimedia Lessons

Table 18. *Learner Engagement in Multimedia Lessons*

Indicator	T WM	T SD	L WM	L SD	Avg WM	Avg SD	I
Learners demonstrate increased interest during multimedia lessons.	4.00	1.05	4.08	1.02	4.04	1.04	Agree
Multimedia tools encourage active classroom participation.	3.83	1.10	3.96	1.06	3.90	1.08	Agree
Instructional media motivates learners to engage in learning tasks.	4.06	1.06	4.10	1.01	4.08	1.04	Agree
Learners show curiosity when multimedia materials are used.	3.83	1.09	3.98	1.05	3.91	1.07	Agree
Multimedia instruction promotes interactive classroom discussions.	3.89	1.11	3.99	1.06	3.94	1.09	Agree
Instructional media enhances learners' attention during lessons.	3.83	1.08	4.07	1.04	3.95	1.06	Agree
Over-all Mean	3.91	1.08	4.03	1.04	3.97	1.06	Agree

Note. T = teachers; L = learners; Avg = source Average; WM = weighted mean; SD = source-reported standard deviation; I = source interpretation. Average entries are source-reported group summaries, not verified pooled statistics. Source Results legend: 4.50–5.00 = Strongly Agree; 3.50–4.49 = Agree; 2.50–3.49 = Neutral; 1.50–2.49 = Disagree; 1.00–1.49 = Strongly Disagree.

Table 18 reports teacher and learner means of 3.91 and 4.03, respectively, and a source-reported Average mean of 3.97 (Agree). These summarize questionnaire agreement with the listed indicators.

Summary of Instructional Media Integration

Table 19. *Summary of Instructional Media Integration*

Indicator	T WM	T SD	L WM	L SD	Avg WM	Avg SD	I
Types of Instructional Media Utilized	3.83	1.13	3.91	1.09	3.87	1.11	Agree
Frequency and Duration of Multimedia Use	3.72	1.14	3.82	1.10	3.77	1.12	Agree
Instructional Strategies in Instructional Media Integration	3.58	1.24	3.71	1.20	3.65	1.22	Agree
Alignment of Multimedia Tools with Lesson Objectives	3.74	1.20	3.84	1.17	3.79	1.18	Agree
Learner Engagement in Multimedia Lessons	3.91	1.08	4.03	1.04	3.97	1.06	Agree
Over-all Mean	3.76	1.16	3.86	1.12	3.81	1.14	Agree

Note. T = teachers; L = learners; Avg = source Average; WM = weighted mean; SD = source-reported standard deviation; I = source interpretation. Average entries are source-reported group summaries, not verified pooled statistics. Source Results legend: 4.50–5.00 = Strongly Agree; 3.50–4.49 = Agree; 2.50–3.49 = Neutral; 1.50–2.49 = Disagree; 1.00–1.49 = Strongly Disagree.

Critical Thinking Skills

Table 20. *Critical Thinking Skills*

Indicator	T WM	T SD	L WM	L SD	Avg WM	Avg SD	I
Instructional media helps learners analyze information critically.	4.50	0.51	4.56	0.54	4.53	0.53	Strongly Agree
Multimedia lessons improve learners' problem-solving abilities.	4.56	0.51	4.56	0.58	4.56	0.55	Strongly Agree
Learners evaluate information presented through digital media.	4.44	0.62	4.56	0.50	4.50	0.56	Strongly Agree
Multimedia instruction encourages learners to ask analytical questions.	4.50	0.51	4.52	0.54	4.51	0.53	Strongly Agree
Learners demonstrate reasoning skills during multimedia activities.	4.50	0.51	4.54	0.58	4.52	0.55	Strongly Agree
Instructional media strengthens learners' ability to interpret information.	4.50	0.51	4.58	0.54	4.54	0.53	Strongly Agree
Over-all Mean	4.50	0.53	4.55	0.55	4.53	0.54	Strongly Agree

Note. T = teachers; L = learners; Avg = source Average; WM = weighted mean; SD = source-reported standard deviation; I = source interpretation. Average entries are source-reported group summaries,

not verified pooled statistics. Source Results legend: 4.50–5.00 = Strongly Agree; 3.50–4.49 = Agree; 2.50–3.49 = Neutral; 1.50–2.49 = Disagree; 1.00–1.49 = Strongly Disagree.

Table 20 reports teacher and learner means of 4.50 and 4.55, respectively, and a source-reported Average mean of 4.53 (Strongly Agree). These summarize questionnaire agreement with the listed indicators.

Academic Achievement

Table 21. *Academic Achievement*

Indicator	T WM	T SD	L WM	L SD	Avg WM	Avg SD	I
Instructional media contributes to improved academic performance.	3.94	1.16	3.96	1.12	3.95	1.14	Agree
Learners complete tasks more efficiently using digital tools.	3.89	1.08	3.96	1.09	3.92	1.08	Agree
Instructional media improves learners' comprehension of lessons.	4.06	1.06	4.00	1.07	4.03	1.06	Agree
Learners demonstrate better performance in assessments when multimedia is used.	3.78	1.11	3.90	1.20	3.84	1.16	Agree
Digital learning resources support mastery of competencies.	3.78	1.17	3.96	1.03	3.87	1.10	Agree
Instructional media enhances overall academic achievement.	3.83	1.25	3.98	1.19	3.91	1.22	Agree
Over-all Mean	3.88	1.14	3.96	1.12	3.92	1.13	Agree

Note. T = teachers; L = learners; Avg = source Average; WM = weighted mean; SD = source-reported standard deviation; I = source interpretation. Average entries are source-reported group summaries, not verified pooled statistics. Source Results legend: 4.50–5.00 = Strongly Agree; 3.50–4.49 = Agree; 2.50–3.49 = Neutral; 1.50–2.49 = Disagree; 1.00–1.49 = Strongly Disagree.

Table 21 reports teacher and learner means of 3.88 and 3.96, respectively, and a source-reported Average mean of 3.92 (Agree). These summarize questionnaire agreement with the listed indicators.

Motivation and Engagement

Table 22. *Motivation and Engagement*

Indicator	T WM	T SD	L WM	L SD	Avg WM	Avg SD	I
Technology-enhanced lessons increase learner motivation.	4.50	0.62	4.66	0.52	4.58	0.57	Strongly Agree
Learners participate actively in multimedia activities.	4.56	0.51	4.66	0.48	4.61	0.49	Strongly Agree
Multimedia tools make learning more engaging.	4.56	0.62	4.66	0.56	4.61	0.59	Strongly Agree
Instructional media encourages curiosity and exploration.	4.50	0.51	4.64	0.53	4.57	0.52	Strongly Agree
Learners show enthusiasm during multimedia-based instruction.	4.50	0.62	4.64	0.56	4.57	0.59	Strongly Agree
Technology-enhanced instruction strengthens learning engagement.	4.56	0.51	4.66	0.48	4.61	0.49	Strongly Agree
Over-all Mean	4.53	0.56	4.65	0.52	4.59	0.54	Strongly Agree

Note. T = teachers; L = learners; Avg = source Average; WM = weighted mean; SD = source-reported standard deviation; I = source interpretation. Average entries are source-reported group summaries, not verified pooled statistics. Source Results legend: 4.50–5.00 = Strongly Agree; 3.50–4.49 = Agree; 2.50–3.49 = Neutral; 1.50–2.49 = Disagree; 1.00–1.49 = Strongly Disagree.

Table 22 reports teacher and learner means of 4.53 and 4.65, respectively, and a source-reported Average mean of 4.59 (Strongly Agree). These summarize questionnaire agreement with the listed indicators.

Collaboration and Communication Skills

Table 23. *Collaboration and Communication Skills*

Indicator	T WM	T SD	L WM	L SD	Avg WM	Avg SD	I
Multimedia activities promote collaboration among learners.	3.83	1.12	3.94	1.12	3.89	1.12	Agree
Digital tools support effective communication in group tasks.	3.83	1.01	3.94	1.07	3.89	1.04	Agree
Learners share ideas actively during multimedia discussions.	3.78	1.08	4.00	1.06	3.89	1.07	Agree
Multimedia learning encourages teamwork among students.	3.72	1.10	3.90	1.19	3.81	1.14	Agree
Learners communicate ideas effectively using digital platforms.	3.67	1.11	3.90	1.08	3.78	1.09	Agree
Instructional media supports cooperative learning activities.	3.67	1.20	3.96	1.18	3.81	1.19	Agree
Over-all Mean	3.75	1.10	3.94	1.12	3.85	1.12	Agree

Note. T = teachers; L = learners; Avg = source Average; WM = weighted mean; SD = source-reported standard deviation; I = source interpretation. Average entries are source-reported group summaries, not verified pooled statistics. Source Results legend: 4.50–5.00 = Strongly Agree; 3.50–4.49 = Agree; 2.50–3.49 = Neutral; 1.50–2.49 = Disagree; 1.00–1.49 = Strongly Disagree.

Table 23 reports teacher and learner means of 3.75 and 3.94, respectively, and a source-reported Average mean of 3.85 (Agree). These summarize questionnaire agreement with the listed indicators.

Learners' Confidence in Academic Tasks

Table 24. *Learners' Confidence in Academic Tasks*

Indicator	T WM	T SD	L WM	L SD	Avg WM	Avg SD	I
Instructional media increases learners' confidence in learning tasks.	3.89	1.18	4.02	1.12	3.95	1.15	Agree
Learners handle complex tasks better with multimedia support.	3.94	1.05	3.98	1.08	3.96	1.07	Agree
Instructional media helps learners understand difficult concepts.	3.94	1.16	4.18	1.05	4.06	1.11	Agree
Learners feel confident presenting ideas during multimedia activities.	3.83	1.19	3.94	1.09	3.88	1.14	Agree
Multimedia resources encourage independent learning.	3.89	1.14	3.96	1.07	3.92	1.11	Agree

Technology-enhanced learning strengthens learners' academic confidence.	3.78	1.34	4.00	1.11	3.89	1.23	Agree
Over-all Mean	3.88	1.18	4.01	1.09	3.95	1.14	Agree

Note. T = teachers; L = learners; Avg = source Average; WM = weighted mean; SD = source-reported standard deviation; I = source interpretation. Average entries are source-reported group summaries, not verified pooled statistics. Source Results legend: 4.50–5.00 = Strongly Agree; 3.50–4.49 = Agree; 2.50–3.49 = Neutral; 1.50–2.49 = Disagree; 1.00–1.49 = Strongly Disagree.

Table 24 reports teacher and learner means of 3.88 and 4.01, respectively, and a source-reported Average mean of 3.95 (Agree). These summarize questionnaire agreement with the listed indicators.

Summary of Learner Outcomes

Table 25. *Summary of Learner Outcomes*

Indicator	T WM	T SD	L WM	L SD	Avg WM	Avg SD	I
Critical Thinking Skills	4.50	0.63	4.56	0.59	4.53	0.61	Strongly Agree
Academic Achievement	3.89	1.11	3.95	1.10	3.92	1.10	Agree
Motivation and Engagement	4.54	0.62	4.66	0.58	4.60	0.60	Strongly Agree
Collaboration and Communication Skills	3.76	1.09	3.94	1.15	3.85	1.12	Agree
Learners' Confidence in Academic Tasks	3.88	1.18	4.01	1.09	3.95	1.14	Agree
Over-all Mean	4.11	0.93	4.22	0.90	4.17	0.92	Agree

Note. T = teachers; L = learners; Avg = source Average; WM = weighted mean; SD = source-reported standard deviation; I = source interpretation. Average entries are source-reported group summaries, not verified pooled statistics. Source Results legend: 4.50–5.00 = Strongly Agree; 3.50–4.49 = Agree; 2.50–3.49 = Neutral; 1.50–2.49 = Disagree; 1.00–1.49 = Strongly Disagree.

Association Between Instructional Media Integration and Learner Outcomes

Table 26. *Test of Significant Relationship*

Variables	r-value	df	p-value	Interpretation	Remarks
Level of Instructional Media Integration and Learner Outcomes in Relation to Instructional Media	0.31	66	0.01	Significant Relationship	Reject H_0

The source reported a positive Pearson correlation between instructional media integration and perceived learner outcomes ($r = .31$, $df = 66$, $p = .01$). At $\alpha = .05$, the reported null hypothesis was rejected. This is evidence of an association in the supplied analysis; it does not show that media use caused improvements in critical thinking or academic achievement. No separate domain correlations or controlled causal analysis are reported.

Best Practices in Using Instructional Media

Table 27. *Best Practices in Using Instructional Media as Observed in the Classroom*

Rank	Indicators / Strands	Percentage	Interpretation
1	Instructional media are aligned with the lesson objectives and learning activities.	88.00%	Very High
2	Teachers provide clear explanations when instructional media are used in class.	87.60%	Very High
3	Instructional media are used to support and explain the lesson clearly.	87.00%	Very High
4	Multimedia presentations (slides, videos, or animations) are used to make lessons easier to understand.	86.40%	Very High
5	Instructional videos or digital materials help learners understand difficult concepts.	86.00%	Very High
6	Learners are encouraged to participate during multimedia-supported lessons.	85.60%	Very High
7	Feedback is provided after multimedia-based activities or tasks.	85.40%	Very High
8	Learners are given opportunities to analyze or discuss information presented through instructional media.	85.00%	Very High
9	Instructional media are used to support group activities or collaborative learning tasks.	84.40%	Very High
10	Interactive tools such as online quizzes or digital activities are used during the lesson.	84.00%	High
	Overall Percentage	85.54%	Very High

Alignment of instructional media with lesson objectives ranked first (88.00%), followed by clear teacher explanations (87.60%) and using media to explain lessons (87.00%). Interactive quizzes or digital activities ranked last (84.00%, High). The source reports an overall 85.54%; its derivation requires confirmation. The percentages describe the supplied best-practice ratings and should not be treated as verified proportions of respondents without their calculation method[8].

Discussion

Teachers and learners generally agreed that instructional media were used across lesson delivery, activities and objectives. The detailed tables showed the highest instructional-integration domain rating for learner engagement (Average WM = 3.97) and the lowest for instructional strategies (3.65). These patterns support the source's proposal to strengthen purposeful lesson planning and teacher capacity building, rather than assuming that access to technology alone ensures improved learning[9].

The detailed outcome tables indicate strong agreement with critical-thinking and motivation statements, alongside agreement with achievement, collaboration and confidence statements. These are perceptions of outcomes. They are consistent with the manuscript's use of multimedia-learning and cognitive-load perspectives to guide lesson design, but the ratings and positive correlation do not independently establish gains in measured achievement or causal effects. Conflicting summary values limit precise aggregate interpretation.

The proposed framework addresses the source's observed priorities through aligned multimedia lessons, teacher orientation and training, critical-thinking tasks, collaborative activities and monitoring. Access remains relevant because 74% of learner respondents relied on smartphones with mobile data. The study is confined to the supplied school sample; learner selection, instrument

reliability, scoring conventions and the combined-group correlation require clearer documentation before broader conclusions can be drawn [10].

Output of the Study

The generally favorable ratings of instructional media integration and perceived learner outcomes informed the proposed Multimedia-Enhanced Instructional Framework for Bugang National High School. The lower rating for instructional strategies, compared with learner engagement, supports the source's emphasis on lesson planning, teacher preparation and purposeful selection of media. The reported association provides a basis for further development and evaluation, rather than evidence that the proposed framework has already improved outcomes [11].

The supplied output combines multimedia components, an instructional design model, and delivery and implementation strategies. Its implementation scheme includes needs assessment, orientation, lesson-plan development, capacity building, digital tools, parent support, critical-thinking and collaborative tasks, classroom use, monitoring and final evaluation. Five sample activities translate these components into classroom tasks. Their objectives and expected outcomes remain proposed; the blank accomplishment and remarks fields are preserved.

RATIONALE

The integration of instructional media in classroom instruction has become an important component of modern teaching and learning. With the continuous advancement of digital technologies and the increasing availability of multimedia resources, teachers now have access to various tools that can improve instructional delivery and support meaningful learning experiences. Educational media such as instructional videos, multimedia presentations, digital modules, interactive simulations, and online learning platforms allow teachers to present lesson content in more engaging and understandable ways. These tools help transform traditional classrooms into technology-supported learning environments where learners are encouraged to explore concepts actively and participate in the learning process [12].

In the context of secondary education, particularly in Bugang National High School, the use of educational media provides opportunities for learners to develop deeper understanding of lesson content while strengthening their critical thinking skills. Traditional teaching methods often rely on lecture-based instruction where learners passively receive information. Although this approach can deliver knowledge effectively, it may limit learners' ability to analyze information, interpret ideas, and apply concepts to real-life situations. By integrating multimedia tools into instruction, teachers can create interactive learning environments that stimulate curiosity, encourage inquiry, and promote active participation in classroom discussions and activities.

Instructional media integration also supports the diverse learning needs of students. Learners have different learning styles and preferences that influence how they process information. Visual learners benefit from images, diagrams, and videos that clearly illustrate lesson concepts. Auditory learners gain better understanding through narrated explanations and multimedia discussions, while kinesthetic learners engage actively through interactive digital activities and collaborative tasks. By incorporating multimedia resources into instruction, teachers are able to address these differences and create inclusive learning environments that allow all learners to participate effectively in classroom learning [13].

The proposed framework is intended to support the development of learners' critical thinking skills through multimedia-supported instruction. Through digital learning materials, students are encouraged to analyze information, evaluate sources, interpret data, and solve problems using logical reasoning. These learning experiences help learners develop analytical and decision-making skills essential for academic success and responsible participation in society. Instructional media are intended to support academic achievement by making lessons more engaging and interactive. When

learners are actively involved in multimedia-based learning activities, they tend to retain information more effectively and demonstrate greater motivation toward completing academic tasks.

Moreover, the integration of instructional media aligns with the Philippine Professional Standards for Teachers (PPST) and the Department of Education's initiatives for technology integration in education. These initiatives promote learner-centered instruction and the development of 21st-century skills such as critical thinking, communication, collaboration, and creativity. Ultimately, the proposed Multimedia-Enhanced Instructional Framework provides teachers with practical strategies for integrating instructional media effectively. Through this framework, teachers can create engaging learning experiences that strengthen learners' critical thinking skills, improve academic achievement, and prepare students for the demands of a technology-driven world [14].

OBJECTIVES

The following are the objectives of the study:

1. To determine the level of instructional media integration in classroom instruction in Bugang National High School.

2. To assess the level of learners' critical thinking skills and academic achievement in relation to multimedia-enhanced instruction.

3. To identify the types of instructional media and multimedia tools that effectively support teaching and learning processes.

4. To determine the challenges encountered by teachers and learners in the integration of instructional media in classroom instruction.

5. To propose a multimedia-enhanced instructional framework that can strengthen learners' critical thinking skills and academic achievement.

Components of the Framework

The proposed Multimedia-Enhanced Instructional Framework consists of three major components: Multimedia Components, Instructional Design Model, and Delivery and Implementation. These components work together to ensure that instructional media are selected, organized, and applied effectively in classroom instruction.

1. Multimedia Components

This component refers to the different forms of instructional media used in classroom instruction. These include instructional videos, multimedia presentations, digital modules, interactive quizzes, collaborative platforms, visuals, animations, and simulations. These tools serve as the core instructional resources that make lessons clearer, more engaging, and more responsive to learner needs. The selection of multimedia components should be based on relevance to the lesson, appropriateness to the learners' level, and alignment with curriculum competencies.

2. Instructional Design Model

This component refers to the organized process followed by teachers in planning and preparing multimedia-supported lessons. The model may be structured into the following phases: analysis, design, development, implementation, and evaluation. In the analysis phase, teachers identify learner needs, lesson objectives, and available resources. In the design and development phases, teachers select suitable media, prepare activities, and align them with competencies and assessments. In the implementation phase, the lesson is delivered using multimedia tools. In the evaluation phase, learner performance and the effectiveness of the instructional media are assessed. This component ensures that instructional media integration remains systematic, purposeful, and learner-centered.

3. Delivery and Implementation

This component refers to the actual classroom application of the framework. It includes lesson introduction, multimedia presentation of content, guided discussion, collaborative activities, interactive tasks, formative assessment, feedback, and reinforcement. Through effective delivery and implementation, teachers translate planned multimedia lessons into actual learning experiences that encourage critical thinking, improve academic achievement, and strengthen learner engagement. This component also emphasizes classroom management, pacing, learner participation, and continuous monitoring of instructional effectiveness.

The framework begins with the identification of learner needs, lesson objectives, and available resources. Based on these, teachers select appropriate multimedia components that can best support the lesson. The chosen resources are then organized using the instructional design model, which ensures that multimedia-supported lessons are carefully planned, aligned with competencies, and suited to the learning needs of students. Finally, through delivery and implementation, the instructional plan is carried out in the classroom through structured activities, guided interaction, assessment, and feedback.

The framework assumes that when teachers are guided in the purposeful use of instructional media, learners are more likely to experience improved critical thinking skills, stronger academic achievement, greater motivation and engagement, better collaboration and communication, and increased confidence in academic tasks. Thus, the framework serves as a practical guide for strengthening multimedia-enhanced instruction and improving learner outcomes.

Flow of the Framework

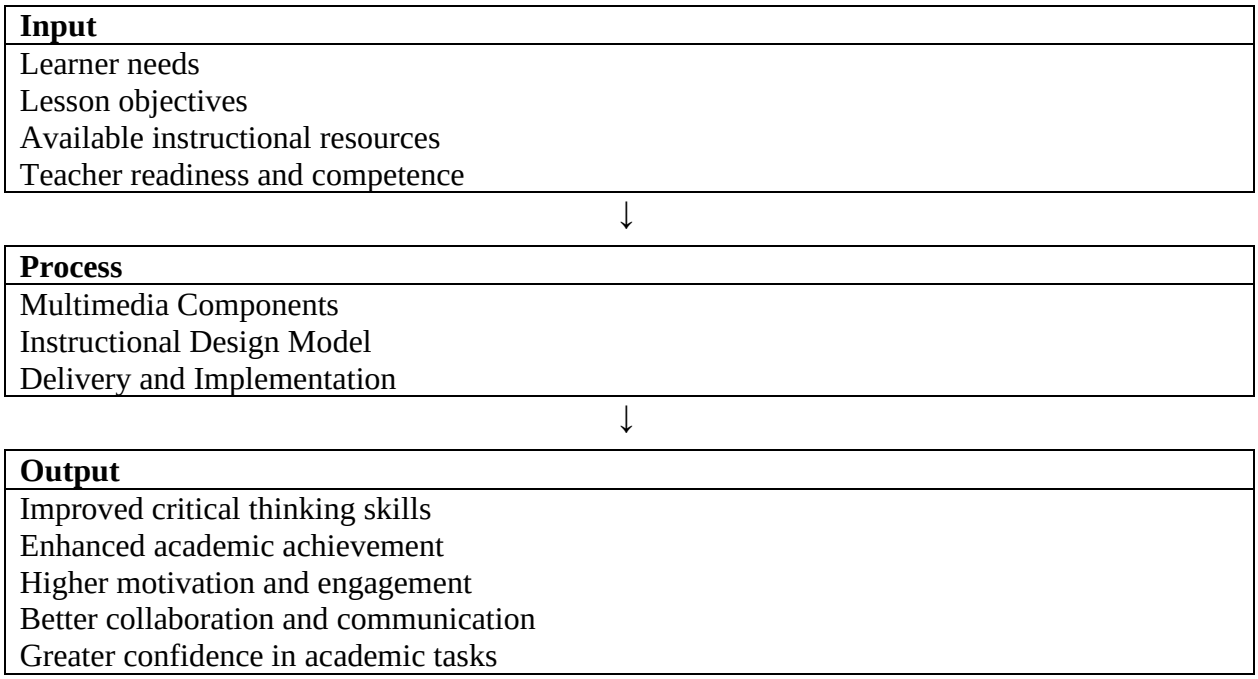


Figure 4. *Flow of the Proposed Multimedia-Enhanced Instructional Framework*

The framework shows that the proposed Multimedia-Enhanced Instructional Framework begins with identified learner needs, lesson objectives, available resources, and teacher readiness. These inputs guide the selection of multimedia components, the use of an instructional design model, and the actual delivery and implementation of classroom instruction. Through these interconnected processes, the framework is expected to improve learner outcomes in terms of critical thinking, academic achievement, motivation and engagement, collaboration and communication, and confidence in academic tasks.

Scheme of Implementation

The implementation of the Multimedia-Enhanced Instructional Framework will follow a systematic and organized approach designed to strengthen teaching practices and improve learner outcomes. The process begins with a needs assessment to determine the current level of instructional media integration, learners' critical thinking abilities, and academic performance. Data gathered from surveys, classroom observations, and academic records will provide baseline information necessary for designing effective instructional strategies.

Based on the results of the assessment, teachers will develop lesson plans that integrate various forms of instructional media such as instructional videos, multimedia presentations, digital learning modules, interactive quizzes, and collaborative online platforms. These multimedia resources will be aligned with lesson objectives and curriculum competencies to ensure that instructional activities remain meaningful and relevant to the learners' academic needs[15].

The implementation phase will involve the gradual integration of multimedia tools into classroom instruction. Teachers will facilitate multimedia-based activities that encourage learners to analyze information, solve problems, and participate actively in classroom discussions. Individual and group learning activities will be incorporated to promote collaboration, communication, and critical thinking skills among students. Teachers will also receive capacity-building support and orientation on effective strategies for multimedia integration. Workshops and peer mentoring sessions will be conducted to enhance teachers' competence in selecting appropriate digital resources, designing multimedia-supported lessons, and assessing learner performance.

Continuous monitoring and evaluation will be conducted to assess the effectiveness of the framework. Classroom observations, learner feedback, and performance assessments will be used to determine improvements in learner engagement, critical thinking, and academic achievement. Findings from the monitoring process will guide necessary adjustments and improvements in the implementation of multimedia-based instruction. Collaboration with school administrators, fellow teachers, and parents will also be encouraged to strengthen support for multimedia-enhanced learning. By fostering a supportive learning environment both inside and outside the classroom, the proposed framework ensures that instructional media integration contributes positively to the development of learners' academic and intellectual abilities.

Through this systematic approach, the Multimedia-Enhanced Instructional Framework aims to improve instructional practices, promote active learning, and enhance learners' critical thinking skills and academic achievement.

Table 28. *Scheme of Implementation — Needs Assessment*

Field	Details
Areas of Concern	Needs Assessment
Objectives	Determine current level of media integration and learner outcomes
Strategies	Conduct surveys, classroom observations, and baseline assessments
Persons Involved	School Head, Teachers, Students
Budget	₱5,000
Source of Budget	MOOE
Time Frame	June 2026
Expected Outcome	Baseline data for instructional planning
Actual Accom-plishments	
Remarks	

Table 29. *Scheme of Implementation — Teacher Orientation*

Field	Details
Areas of Concern	Teacher Orientation
Objectives	Introduce the multimedia-enhanced instructional framework
Strategies	Conduct orientation sessions and meetings
Persons Involved	School Head, Teachers
Budget	₱3,000
Source of Budget	MOOE
Time Frame	June 2026
Expected Outcome	Teachers understand framework implementation
Actual Accom-plishments	
Remarks	

Table 30. *Scheme of Implementation — Development of Multimedia Lesson Plans*

Field	Details
Areas of Concern	Development of Multimedia Lesson Plans
Objectives	Prepare lesson plans integrating instructional media
Strategies	Design lessons using videos, digital modules, and presentations
Persons Involved	Teachers
Budget	₱7,000
Source of Budget	MOOE
Time Frame	June–Aug 2026
Expected Outcome	Multimedia lesson plans developed
Actual Accom-plishments	
Remarks	

Table 31. *Scheme of Implementation — Teacher Capacity Building*

Field	Details
Areas of Concern	Teacher Capacity Building
Objectives	Improve teachers' ICT and multimedia integration skills
Strategies	Conduct training workshops and peer mentoring
Persons Involved	School Head, ICT Coordinator
Budget	₱10,000
Source of Budget	MOOE
Time Frame	June 2026
Expected Outcome	Teachers gain improved multimedia teaching skills
Actual Accom-plishments	
Remarks	

Table 32. *Scheme of Implementation — Integration of Digital Tools*

Field	Details
Areas of Concern	Integration of Digital Tools
Objectives	Enhance instructional delivery using technology
Strategies	Use multimedia presentations, online quizzes, and simulations
Persons Involved	Teachers, Students
Budget	₱8,000
Source of Budget	MOOE
Time Frame	July–Oct 2026
Expected Outcome	Improved instructional delivery
Actual Accom-plishments	
Remarks	

Table 33. *Scheme of Implementation — Parent and Community Support*

Field	Details
Areas of Concern	Parent and Community Support
Objectives	Encourage home support for multimedia learning
Strategies	Conduct parent orientation and information sessions
Persons Involved	Teachers, Parents
Budget	₱2,000
Source of Budget	MOOE
Time Frame	July 2026
Expected Outcome	Increased parental support
Actual Accom-plishments	
Remarks	

Table 34. *Scheme of Implementation — Critical Thinking Activities*

Field	Details
Areas of Concern	Critical Thinking Activities
Objectives	Strengthen learners' analytical and problem-solving skills
Strategies	Conduct multimedia-based discussions and problem-solving tasks
Persons Involved	Teachers, Students
Budget	₱4,000
Source of Budget	MOOE
Time Frame	July–Oct 2026
Expected Outcome	Improved critical thinking skills
Actual Accom-plishments	
Remarks	

Table 35. *Scheme of Implementation — Collaborative Learning Activities*

Field	Details
Areas of Concern	Collaborative Learning Activities
Objectives	Promote teamwork and communication

Strategies	Implement group projects and multimedia tasks
Persons Involved	Teachers, Students
Budget	₱5,000
Source of Budget	MOOE
Time Frame	Aug–Nov 2026
Expected Outcome	Improved collaboration and communication
Actual Accom-plishments	
Remarks	

Table 36. *Scheme of Implementation — Classroom Implementation*

Field	Details
Areas of Concern	Classroom Implementation
Objectives	Apply multimedia instruction in classroom lessons
Strategies	Implement multimedia-supported learning activities
Persons Involved	Teachers, Students
Budget	₱7,000
Source of Budget	MOOE
Time Frame	Aug–Nov 2026
Expected Outcome	Increased learner engagement
Actual Accom-plishments	
Remarks	

Table 37. *Scheme of Implementation — Monitoring and Evaluation*

Field	Details
Areas of Concern	Monitoring and Evaluation
Objectives	Assess effectiveness of multimedia integration
Strategies	Conduct classroom observations and formative assessments
Persons Involved	School Head, Teachers
Budget	₱3,000
Source of Budget	MOOE
Time Frame	Aug–Nov 2026
Expected Outcome	Data on improvements in learning outcomes
Actual Accom-plishments	
Remarks	

Table 38. *Scheme of Implementation — Final Evaluation and Reporting*

Field	Details
Areas of Concern	Final Evaluation and Reporting
Objectives	Evaluate results and recommend improvements
Strategies	Analyze findings and present reports to stakeholders
Persons Involved	School Head, Teachers
Budget	₱3,500
Source of Budget	MOOE
Time Frame	Dec 2026
Expected Outcome	Evidence of improved academic achievement and critical thinking

Actual Accom-plishments	
Remarks	

Sample Multimedia-Enhanced Learning Activities

1. Media Detectives – Critical Thinking Investigation

Objective: Develop learners' critical thinking skills by analyzing and evaluating multimedia information sources.

Materials: Instructional videos, laptops/tablets, internet access, evaluation worksheets, projector.

Procedure:

1) Present a short instructional video related to the lesson topic.
2) Divide students into small groups called "Media Detectives."
3) Each group analyzes the information presented in the video and identifies key ideas, facts, and supporting evidence.
4) Groups present their findings and evaluate whether the information is reliable and relevant.

Expected Outcome: Learners demonstrate improved analytical thinking, information evaluation skills, and collaborative discussion.

2. Digital Problem Solver – Multimedia Case Analysis

Objective: Enhance problem-solving and critical thinking skills through multimedia-based case scenarios.

Materials: Multimedia case studies, digital presentations, worksheets, laptops or tablets.

Procedure:

1) Present a real-life scenario using a multimedia presentation.
2) Divide learners into groups and assign each group the role of "Problem Solvers."
3) Groups analyze the case and propose solutions using information gathered from multimedia sources.
4) Each group presents their solution and justifies their reasoning.

Expected Outcome: Learners develop problem-solving abilities, critical reasoning, and confidence in presenting ideas.

3. Knowledge Quest – Interactive Multimedia Quiz

Objective: Reinforce lesson understanding and academic achievement through interactive multimedia assessments.

Materials: Digital quiz platforms (Kahoot, Quizizz), projector, smartphones or laptops.

Procedure:

1) Prepare a multimedia-based quiz related to the lesson topic.
2) Students participate individually or in teams.
3) Correct answers earn points and rankings on the leaderboard.
4) Discuss the correct answers and clarify misconceptions after each round.

Expected Outcome: Learners demonstrate improved retention of lesson concepts and increased motivation in learning.

4. Media Makers – Collaborative Digital Project

Objective: Strengthen creativity, collaboration, and communication skills through multimedia project creation.

Materials: Presentation software (PowerPoint, Canva, Google Slides), laptops, internet access.

Procedure:

1) Divide the class into groups and assign a lesson topic.
2) Each group creates a multimedia presentation explaining the topic.
3) Students incorporate images, videos, and diagrams in their presentation.
4) Groups present their projects to the class for discussion and feedback.

Expected Outcome: Learners develop communication skills, teamwork, creativity, and deeper understanding of lesson concepts.

5. Research Explorer – Digital Inquiry Challenge

Objective: Promote independent learning and research skills through multimedia-based inquiry activities.

Materials: Internet-enabled devices, digital articles, research worksheets.

Procedure:

1) Provide learners with a research question related to the lesson.
2) Students search for relevant information using digital resources.
3) Learners summarize their findings and present conclusions using multimedia tools.
4) The class discusses the results and reflects on the information gathered.

Expected Outcome: Learners demonstrate improved research skills, critical thinking, and confidence in presenting academic information.

Conclusion and Recommendations

Based on the findings, it can be concluded that the integration of instructional media is already an important part of classroom instruction at Bugang National High School. Teachers and learners generally perceived that instructional media were evident in lesson delivery through videos, multimedia presentations, digital learning materials, interactive assessments, and other multimedia-supported resources. The study further concludes that instructional media generally support learner outcomes, particularly in critical thinking skills, academic achievement, motivation and engagement, collaboration and communication skills, and learners' confidence in academic tasks. Instructional media appear to have a strong effect on learners' motivation, engagement, and the development of critical thinking. The study also found that the effective use of instructional media, when aligned with lesson objectives and classroom activities, plays a vital role in improving learners' classroom experiences and learning performance. Finally, the significant relationship between instructional media integration and learner outcomes confirms that the use of instructional media contributes meaningfully to learners' development and performance, although other factors may also influence learner outcomes. It is recommended that teachers continue improving their skills in multimedia instruction, digital literacy, and technology-enhanced pedagogy. Schools should provide adequate instructional resources, functional technology, and strong support systems to ensure meaningful and effective use of instructional media in the classroom. School administrators should strengthen teacher

training, classroom monitoring, and school-based programs that promote the purposeful integration of instructional media aligned with lesson objectives and learner needs. Teachers should be encouraged to use a variety of multimedia strategies to enhance critical thinking, motivation, collaboration, and academic confidence among learners. Future researchers are encouraged to conduct broader studies on the integration of instructional media and learner outcomes, considering factors such as teaching strategies, classroom environment, learner readiness, access to technology, and school support systems.

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