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Research Article

Use of Multimedia-Assisted Instruction and Its Effectiveness In Promoting Learner Engagement Among Elementary Teachers in Castillejos District

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ABSTRACT

The incorporation of technology in education has improved instructional methods and student engagement in classrooms. This research investigated multimedia-enhanced teaching and its effectiveness in fostering student engagement among public elementary school educators in Castillejos District, Zambales. It specifically assessed the degree of multimedia-assisted instruction utilization and its efficacy on behavioral, emotional, cognitive, and social involvement among students. The research is important in offering understanding into how multimedia tools enhance teaching and learning methods. A structured survey questionnaire was used in a descriptive–quantitative research design with 165 public elementary school teachers selected randomly. Data were examined utilizing frequency, weighted average, standard deviation, Analysis of Variance (ANOVA), and Pearson r correlation. Results indicated that educators extensively used multimedia-supported teaching and considered it very effective in enhancing student engagement. No notable differences were observed when participants were categorized based on profile variables. Nonetheless, a noteworthy positive correlation was found between multimedia-assisted instruction and learner engagement, suggesting that successful multimedia integration boosts student participation and involvement in the learning process. The research found that multimedia-supported teaching effectively enhances student involvement in primary education. Schools should enhance teacher training in multimedia integration and ensure sufficient technological resources are available to facilitate effective teaching.

Keywords: *Multimedia-Assisted Instruction, Learner Engagement, Educational Technology, Public Elementary Teachers, Castillejos District, Zambales*

Introduction

The swift progression of digital technologies has greatly altered educational methods globally, resulting in a greater embrace of technology-integrated teaching strategies across different learning settings. Among these advancements, multimedia-assisted instruction (MAI) has arisen as a powerful teaching approach that combines text, audio, visuals, animations, videos, and interactive features to enhance significant learning experiences. Incorporating multimedia into education aligns with the objectives of 21st-century learning, focusing on student-centered teaching, active

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engagement, and cultivating advanced thinking abilities. As educational institutions persist in adopting digital transformation, the successful application of multimedia-assisted instruction has grown more crucial in boosting teaching effectiveness and improving learner outcomes.

The theoretical basis of multimedia-assisted instruction mainly rests on Mayer's Cognitive Theory of Multimedia Learning, which suggests that learners achieve better information processing when verbal and visual content is offered at the same time via dual cognitive pathways (Mayer, 2021). This theory suggests that well-designed multimedia resources can enhance understanding, memory, and knowledge application by promoting significant cognitive engagement. As a result, multimedia-supported teaching has attracted significant interest from educators and researchers as an important resource for enhancing effective learning experiences.

Recent research has emphasized the beneficial effects of multimedia-enhanced teaching in improving student engagement, involvement, academic success, and overall educational experiences. Learning environments rich in multimedia promote active participation by enabling learners to connect with instructional material in various and significant manners. Galang (2025) highlighted that multimedia-supported teaching fosters interactive and learner-focused educational experiences, enhancing student engagement and comprehension. In a similar vein, the integration of interactive multimedia elements like simulations, educational games, videos, and embedded assessments has been shown to foster enhanced cognitive processing and increased learner involvement (Li et al., 2024). These teaching methods not only enhance student motivation but also promote critical thinking and knowledge creation.

Although its advantages are acknowledged, the efficacy of multimedia-assisted instruction mainly relies on various factors, such as the accessibility and availability of technological resources, pedagogical integration, interactivity, and the quality of instruction. Access and availability continue to be essential factors, especially in developing nations where differences in technological infrastructure persist. Oyinkanola et al. (2023) observed that restricted access to digital resources, internet access, and educational technologies continues to pose a major obstacle to successful multimedia integration in various educational environments. Despite efforts by the Philippine educational system to enhance digital learning environments, issues related to resource availability and technological support still impact classroom implementation.

The success of multimedia-assisted instruction is significantly influenced by pedagogical integration. Successful integration necessitates that educators connect multimedia resources with teaching goals and learning results instead of just employing technology as an additional tool. Studies show that educators' digital skills, technological expertise, and curriculum design abilities greatly impact the success of multimedia use in educational settings (Loureiro et al., 2024). When thoughtfully incorporated into educational practices, multimedia-supported teaching can enhance active learning, boost student engagement, and elevate academic achievement.

Student involvement is broadly acknowledged as an essential element affecting academic success and learning outcomes. Current literature defines learner engagement as a multifaceted concept that includes behavioral, emotional, cognitive, and social aspects. Behavioral engagement pertains to students' involvement in educational tasks, emotional engagement represents their emotions and perspectives on learning, cognitive engagement includes commitment to learning activities and self-management, and social engagement highlights significant connections with classmates and instructors. Instruction aided by multimedia can enhance these aspects by fostering interactive, cooperative, and captivating educational settings that promote active involvement of learners (Zhou, 2023).

While many studies have investigated the connection between multimedia-assisted teaching and academic outcomes, there is a lack of substantial empirical evidence concerning its effectiveness in enhancing the various dimensions of learner engagement, especially in the context of elementary education in the

Philippines. Additionally, there is a lack of local research investigating the use of multimedia-assisted instruction in areas like accessibility and availability, pedagogical integration, interactivity and engagement, and learning improvement. This gap in research highlights the necessity for context-specific studies that can offer evidence-driven insights into the efficacy of multimedia-assisted teaching in enhancing learner engagement among elementary students.

To address these research deficiencies, this study investigated the application of multimedia-assisted teaching and its efficacy in enhancing student engagement among public elementary educators in the Castillejos District, Zambales. The research specifically explored the level of multimedia-assisted teaching application across its key dimensions and evaluated its impact on promoting behavioral, emotional, cognitive, and social involvement among students. The results aim to add to the expanding literature on integrating educational technology and offer practical insights for teachers, school leaders, policymakers, and upcoming researchers looking to enhance learner engagement via effective multimedia-supported teaching methods.

Methodology

This research utilized a descriptive-correlational approach through the survey method to investigate the implementation of multimedia-assisted instruction (MAI) and its efficiency in enhancing learner engagement among public elementary school educators in Castillejos District, Zambales. The sample included 165 teachers who were randomly chosen from a total of 287 public elementary school educators across seventeen elementary schools within the district. The sample size was calculated employing Slovin's formula with a 5% margin of error, and simple random sampling was used to guarantee equal representation of participants. Table 1 displays the demographic profile of the teachers who responded.

Table 1.

Demographic Profile of the Teacher-Respondents

Profile Variables		Frequency (f)	Percentage (%)
Age	56-60	4	2.4
	51-55	24	14.5
	46-50	19	11.5
	41-45	35	21.2
	36-40	39	23.6
	31-35	33	20.0
	26-30	11	6.7
Sex	Male	48	29.1
	Female	117	70.9
Highest Educational Attainment	Bachelor's degree holder	33	20.0
	Master's degree holder	77	46.7
	earned Masters units	43	26.1
	Doctorate degree holder	12	7.3
Years in teaching	30 years above	8	4.8
	25-29 years	23	13.9
	15-19 years	50	30.3
	10-14 years	12	7.3
	5-9 years	38	23.0
	2-4 years	27	16.4
	1 year below	7	4.2
Position/Designation	Teacher I	25	15.2
	Teacher II	20	12.1
	Teacher III	34	20.6

Teacher IV		39	23.6
Teacher V		14	8.5
Teacher VI		13	7.9
Master Teacher I		20	12.1
	Total	**165**	**100.0**

Data were gathered through a structured survey questionnaire that was adapted and revised from existing research. The tool evaluated the application of multimedia-assisted teaching regarding accessibility and availability, pedagogical integration, interactivity and involvement, and improvement in learning according to the studies by Abdulrahaman et al. (2020), Doherty et al. (2022), and Yueh et al. (2012). Learner engagement was evaluated across behavioral, emotional, cognitive, and social dimensions using indicators modified from Fredricks et al. (2004), Henrie et al. (2015), and Wallace-Spurgin (2019). Expert evaluation was used to establish content validity, and pilot testing with 20 non-participating teachers resulted in a Cronbach's alpha coefficient of .914, demonstrating excellent reliability.

Before gathering data, approval was obtained from the Schools Division Superintendent and relevant school officials. The questionnaires were given directly to the respondents, and participation was optional. Ethical guidelines, such as confidentiality, anonymity, and adherence to the Data Privacy Act of 2012, were rigorously maintained during the research.

The gathered data were examined utilizing descriptive and inferential statistics. Frequency counts and percentages illustrated the profile of the respondents, while weighted mean and standard deviation assessed the extent of MAI usage and learner involvement. ANOVA was utilized to examine significant differences among profile variables, while the Pearson product-moment correlation coefficient (Pearson's r) helped assess the relationship between multimedia-assisted teaching and learner engagement. All statistical analyses were performed at a significance level of 0.05.

Results and Discussion

This study aimed to determine the use of multimedia-assisted instruction (MAI) and its effectiveness in promoting learner engagement among public elementary school teachers in Castillejos District, Zambales. Specifically, it sought to describe the profile of the teacher-respondents; assess the level of MAI utilization in terms of accessibility and availability, pedagogical integration, interactivity and engagement, and learning enhancement; evaluate its effectiveness in promoting behavioral, emotional, cognitive, and social engagement among learners; determine whether significant differences exist in the use and effectiveness of MAI when respondents are grouped according to their profile characteristics; and examine the relationship between multimedia-assisted instruction and learner engagement.

Table 2.

Teachers' Use of Multimedia-Assisted Instruction

	Dimensions	Overall Weighted Mean	SD	Descriptive Equivalent	Rank
1	Accessibility and Availability	3.63	.617	Strongly Agree	4
2	Pedagogical Integration	3.68	.532	Strongly Agree	3
3	Interactivity and Engagement	3.73	.475	Strongly Agree	1.5
4	Learning Enhancement	3.73	.460	Strongly Agree	1.5
	OWM	**3.69**	**.521**	**Strongly Agree**	

Legend: 3.25-4.00 (Strongly Agree); 2.50-3.24 (Agree); 1.75-2.49 (Disagree) 1.00-1.74 (Strongly Disagree)

Teacher-respondents strongly agreed that both interactivity and engagement and learning enhancement obtained the highest mean of 3.73 (SD = .475; SD = .460), ranked 1.5, indicating that multimedia-assisted instruction is most evident in promoting active learner involvement and improving learning outcomes. Following this, they also strongly agreed that pedagogical integration of multimedia is evident in their teaching practices, with a mean of 3.68 (SD = .532), ranked 3rd. On the other hand, teachers still strongly agreed that accessibility and availability of multimedia resources are present, which received the lowest mean of 3.63 (SD = .617), ranked 4th. The composite or overall weighted mean of 3.69 (SD = .521), interpreted as "Strongly Agree," suggests that, in general, teachers demonstrate a high level of utilization of multimedia-assisted instruction across all dimensions.

The current results are backed by regional research emphasizing the success of multimedia in enhancing engagement and learning results. Hsu et al. (2022) highlighted that the incorporation of multimedia greatly boosts student involvement and enthusiasm, which corresponds with the current result showing that interactivity and engagement were rated the highest. Similarly, Emma (2025) discovered that the integration of technology has a beneficial impact on students' academic achievement, reinforcing the significance of learning improvement in the present research. This suggests that the use of multimedia directly enhances learning results. Moreover, the high rating of pedagogical integration aligns with the results from Kuş (2025), which indicated that educators are progressively capable of effectively incorporating ICT tools into their teaching methods, aligning them with curriculum standards and educational goals.

Nonetheless, the comparatively lower position of accessibility and availability is backed by research from Sabah and Altalbe (2022), which highlighted that imbalances in ICT resources and infrastructure continue to pose a challenge in schools across the Philippines. This impacts the uniformity of multimedia integration in various educational environments. Furthermore, Oducado and Estoque (2021) noted that although educators show preparedness and flexibility in utilizing technology, constraints in device access and reliable internet connections may obstruct effective execution. This supports the current observation that accessibility, while beneficial, still ranks as the least strong among the dimensions.

Table 3.
Effectiveness in Promoting Learner Engagement

	Dimensions	Overall Weighted Mean	SD	Descriptive Equivalent	Rank
1	Behavioral Engagement	3.70	.476	Strongly Agree	2.5
2	Emotional Engagement	3.73	.475	Strongly Agree	1
3	Cognitive Engagement	3.70	.471	Strongly Agree	2.5
4	Social Engagement	3.69	.478	Strongly Agree	4
	OWM	**3.71**	**.475**	**Strongly Agree**	

Legend: 3.25-4.00 (Strongly Agree); 2.50-3.24 (Agree); 1.75-2.49 (Disagree) 1.00-1.74 (Strongly Disagree)

Teacher-respondents showed strong agreement that emotional engagement received the highest mean of 3.73 (SD = .475), ranking it 1st, signifying that multimedia-assisted instruction is the most effective for increasing learners' emotional involvement in the educational process. Subsequently, they also concurred that both behavioral engagement and cognitive engagement achieved a mean of 3.70 (SD = .476; SD = .471), positioned at 2.5, indicating that multimedia effectively fosters active involvement and higher-order

thinking in learners. Conversely, educators remained in strong agreement that social engagement was apparent, which obtained the lowest average of 3.69 (SD = .478), placing 4th. The overall weighted mean of 3.71 (SD = .475), interpreted as "Strongly Agree," indicates that multimedia-assisted instruction is generally very effective in enhancing learner engagement in all areas.

The current results are backed by regional research highlighting the significant impact of multimedia on students' emotional involvement. Chakraborty (2019) discovered that combining multimedia boosts learners' motivation, interest, and enjoyment, which corresponds with the current result where emotional engagement was the most significant. Likewise, Kholil (2025) noted that the integration of ICT enhances learner participation and cognitive engagement by offering interactive and relevant learning experiences. This reinforces the strong standings of both behavioral and cognitive engagement in the current research. Additionally, Camacho Vega and Delgadillo-Ramos (2023) emphasized that technology-enhanced teaching positively influences various facets of engagement, such as behavioral and cognitive dimensions, by fostering active involvement and critical analysis. This confirms the high ratings in these areas.

Nonetheless, the comparatively lower status of social engagement aligns with the observations made by Olasunkanmi and Salubi (2024), who remarked that although technology enhances interaction, meaningful social engagement necessitates organized collaboration and teacher support to be truly achieved.

Moreover, Vali (2023) highlights that even though ICT tools enhance learner engagement, the cultivation of collaborative and social abilities relies on teaching methods that encourage interaction and teamwork. This reinforces the current observation that while social engagement is high, it is relatively lower than other aspects. On the other hand, Brugliera (2024) discovered that combining multimedia with collaborative learning techniques greatly improves social interaction, indicating that the success of multimedia in this area relies on purposeful instructional planning.

Table 4.

Test of Relationship Between Teacher's Use of Multimedia-Assisted Instruction and its Effectiveness in Promoting Learner Engagement

Sources of Correlations		Teacher's Use of Multimedia-Assisted Instruction	Effectiveness in Promoting Learner Engagement	Decision/ Interpretation
Teacher's Use of Multimedia-Assisted Instruction	Pearson Correlation	1	.676**	**High Positive Correlation, Significant relationship (Reject H_0)**
	Sig. (2-tailed)		.000	
	N	165	165	
Effectiveness in Promoting Learner Engagement	Pearson Correlation	.676**	1	
	Sig. (2-tailed)	.000		
	N	165	165	

**. Correlation is significant at the 0.01 level (2-tailed).

The Pearson Product-Moment Correlation results indicated that the R-value of 0.676 shows a strong positive correlation between the use of multimedia-assisted instruction by teachers and its effectiveness in enhancing learner engagement. This implies that with the rise of multimedia-supported teaching, the degree of student involvement often rises as well. Additionally, the calculated p-value of 0.000 is below the 0.01 significance threshold, suggesting that the association is statistically significant.

The results are backed by regional research highlighting the significant connection

between multimedia usage and student involvement. Caballes (2025) discovered that combining multimedia greatly boosts student involvement by rendering lessons more interactive and exciting, which corresponds with the strong positive correlation noted in this study. Likewise, Pamuji (2025) noted that incorporating ICT in education results in heightened student participation, motivation, and interaction, affirming the important connection between multimedia utilization and engagement.

Furthermore, Almerino et al. (2020) highlighted that technology-enhanced instruction positively influences learners' academic engagement by promoting active involvement and deeper learning. This corroborates the strong association identified in the present findings. In addition, Mccall (2025) emphasized that integrating ICT in instruction enhances learner engagement and improves overall learning experiences, supporting the significant relationship found in the study.

In contrast, Micheal and Edwards-Fapohunda (2024) pointed out that although multimedia can boost engagement, its success relies on effective execution and teacher skill. This implies that the intensity of the connection could change based on how multimedia is employed in the classroom.

Table 5.

Proposed Training Program Focused on Enhancing the Use of Multimedia-assisted Instruction among Elementary Teachers

Component	Objectives	Content/ Focus	Activities/ Strategies	Expected Outputs	Time Frame	Monitoring & Evaluation	DepEd Policy Alignment
Day 1: Foundations of Multimedia-Assisted Instruction	Understand principles of multimedia learning and alignment with curriculum	- Multimedia Learning Principles - Alignment with MELCs - Learner Engagement Framework	Lecture-discussion, case analysis, guided planning	Revised lesson objectives with multimedia integration	Day 1	Output checking; participation rubric	DepEd Order 42, s. 2016
Day 2: Tools and Instructional Design	Develop skills in using multimedia tools for instruction and assessment	- Interactive tools (Kahoot, Quizziz) - Video-based instruction - Multimedia-based assessment	Hands-on workshop, collaborative lesson design	Multimedia-integrated lesson plan	Day 2	Performance-based assessment	BE-LCP (ICT Integration)
Day 3: Advanced Integration and Demonstration	Apply multimedia for higher-order thinking and engagement	- HOTS integration - Collaborative learning strategies - Inclusive multimedia use	Microteaching, peer evaluation, feedback sessions	Demonstration teaching output	Day 3	Rubric-based evaluation	PPST Domains 1 & 4
Post-Training Application	Apply learned skills in actual classroom setting	Classroom implementation of multimedia-assisted lessons	Teaching implementation, documentation (video/portfolio)	Recorded teaching and lesson artifacts	1 Month	Classroom observation tool	PPST; RPMS
Coaching & Mentoring (LAC Sessions)	Provide continuous support and improve practice	Sharing of best practices; troubleshooting challenges	LAC sessions, peer mentoring, coaching	Improved instructional practices	Within 1 Month	LAC monitoring reports	DepEd Order 35, s. 2016

Evaluation Phase	Assess effectiveness of training program	Reflection on teaching practices and learner engagement	Reflection paper, evaluation forms, feedback session	Evaluation report and recommendations	Post-Implementation	Evaluation rubric and reflection analysis	RPMS; Continuous Improvement
Sustainability Plan	Ensure long-term implementation and improvement	- ICT-integrated LAC - Resource repository - Peer mentoring system	Continuous training, sharing sessions, school-based INSET	Sustained multimedia integration practices	Ongoing	Monitoring of LAC and outputs	BE-LCP; MATATAG Agenda

The suggested training program is based on the main outcomes of the study, which indicated that teachers show a strong use of multimedia-assisted teaching, but formal training regarding its educational integration is still relatively scarce. This suggests that although educators are utilizing multimedia tools, their implementation might not consistently coincide with instructional objectives, student requirements, and advanced cognitive processes.

Furthermore, the findings indicated a strongly positive correlation between the use of multimedia-assisted instruction by teachers and the effectiveness in enhancing learner engagement. This highlights the essential function of multimedia as a driver for improving behavioral, emotional, cognitive, and social involvement among students. Nonetheless, differences in execution, especially in profound cognitive involvement and cooperative learning indicate that the successful application of multimedia necessitates not just access but also teaching proficiency and deliberate instructional planning. Moreover, results regarding accessibility and training suggest that organizational backing and opportunities for professional growth are crucial to guarantee fair and efficient incorporation of multimedia in education. Although teachers are skilled and flexible, a lack of organized training could restrict the complete effectiveness of multimedia-supported teaching in enhancing educational results.

In alignment with the thrust of the Department of Education to promote quality teaching, digital transformation, and continuous professional development, this training program is proposed to bridge the gap between usage and effective pedagogical integration. Specifically, it aims to equip teachers with the necessary competencies to design engaging, learner-centered, and technology-enhanced instruction that maximizes the benefits of multimedia in the classroom.

The program is designed as a multi-stage professional development framework, featuring a three-day comprehensive training followed by a one-month implementation and coaching period. This design embodies effective strategies in teacher professional development, highlighting not just the acquisition of knowledge but also supervised practice, feedback, and long-term application. Incorporating a post-training phase guarantees that learning shifts from theoretical knowledge to real classroom application, thus tackling the typical drawback of single training events.

The initial stage of the program emphasizes creating a solid theoretical and educational framework. Educators are familiarized with the foundations of multimedia learning and how they correspond with curriculum benchmarks and Most Essential Learning Competencies (MELCs). This is essential as successful multimedia integration involves not just utilizing digital tools, but also ensuring that these tools are aligned with instruction, purposeful, and centered around the learner. By establishing a foundation in these principles, the program guarantees that multimedia application significantly aids in reaching educational goals.

The second stage focuses on the enhancement of technical and teaching skills. Educators receive practical experience with different multimedia tools and platforms that enhance interactive and engaging teaching. This phase targets the necessity to improve teachers' skills in creating lessons, assessments, and activities that are supported by multimedia. The incorporation of collaborative workshop techniques further encourages peer learning, enabling educators to exchange practices and collectively

build knowledge. This is especially crucial in nurturing a community of practice within the educational setting.

The third phase advances toward higher-level pedagogical integration, focusing on the use of multimedia to promote higher-order thinking skills (HOTS), collaborative learning, and inclusive instruction. The inclusion of microteaching and demonstration lessons provides teachers with the opportunity to apply their learning in a simulated environment, receive feedback, and refine their instructional strategies. This phase is critical in bridging the gap between theoretical understanding and practical application, ensuring that teachers can effectively translate multimedia use into improved learner outcomes.

The post-training period functions as a system for ongoing professional development and responsibility. By means of classroom implementation, coaching, and Learning Action Cell (LAC) sessions, educators receive support to enhance their practices and tackle contextual issues like scarce resources or diverse learner requirements. This stage emphasizes the concept that professional growth is an ongoing journey rather than a singular occurrence. It also matches the current frameworks within the Department of Education, especially the establishment of LAC as a venue for cooperative professional growth.

The program features a complete monitoring and evaluation framework, which encompasses needs assessment prior to training, performance-oriented results, classroom observations, and practices of reflection. This guarantees that the training's efficacy is consistently evaluated and that essential modifications can be implemented to enhance its application. Utilizing various assessment tools enhances the credibility of the program results and fosters evidence-informed decision-making.

In terms of expected outcomes, the program aims to enhance teachers' competence in multimedia integration, leading to improved instructional quality and increased learner engagement across behavioral, emotional, cognitive, and social dimensions. This is consistent with the study's finding of a high positive correlation between multimedia use and learner engagement, indicating that strengthening teachers' skills in this area can yield significant educational benefits. Furthermore, by promoting innovative and learner-centered teaching practices, the program contributes to the broader goal of improving learning outcomes in elementary education.

Ultimately, the sustainability aspect of the program guarantees that its effects reach beyond the initial execution. By incorporating LAC sessions, creating resource repositories, and utilizing peer mentoring, the program cultivates a culture of ongoing enhancement and teamwork among educators. This is in accordance with national educational goals regarding digital transformation and effective teaching, emphasizing the importance of multimedia-supported instruction as a crucial element of 21st-century education.

To summarize, the suggested training program is a thorough, methodical, and enduring solution that tackles the recognized deficiencies in multimedia integration. It goes further than simple application to a strategic, education-focused use, making certain that educators are prepared not just to utilize multimedia tools, but to employ them effectively to boost student engagement and enhance learning results.

Conclusion and Recommendations

This research showed that public elementary school educators in Castillejos District, Zambales exhibit a strong degree of use of multimedia-assisted instruction, especially in promoting interactivity, engagement, and improvement in learning. Instruction assisted by multimedia proved to be very effective in enhancing learners' behavioral, emotional, cognitive, and social involvement, demonstrating its significance as a learner-centered teaching method. The results also indicated that educators typically demonstrate a stable use of multimedia-enhanced teaching irrespective of demographic factors, while its efficacy appears to be largely consistent among different groups. Furthermore, the notable positive correlation between multimedia-supported teaching and student engagement indicates that enhanced use of multimedia in education leads to increased levels of student participation and

interaction. These results highlight the need to enhance teachers' skills and support frameworks to fully utilize the educational advantages of multimedia-assisted teaching in elementary schools.

According to the study's findings, schools and educational leaders should enhance the incorporation of multimedia-assisted instruction by implementing ongoing professional development programs, offering sufficient technological resources, and encouraging innovative teaching methods. Instructors can boost student involvement by employing a broader array of interactive and student-focused multimedia methods and techniques. School leaders ought to adopt specific strategies to tackle inequities in access to multimedia tools and enhance effective teaching integration across various instructional roles. Additionally, the suggested training program could be implemented to improve teachers' multimedia skills and teaching methods. Future research could examine more variables affecting multimedia-supported teaching and student involvement by utilizing larger groups and mixed-method research approaches to broaden and confirm the current results.

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