

Exploring Multimedia Competencies Among Primary School Teachers

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ABSTRACT:

This study examines the current state of multimedia skills among teachers at primary schools in nearby municipalities in Camarines Sur, Region V, Philippines and the challenges associated with integrating multimedia into pedagogical strategies. A descriptive research design was adopted to systematically describe the multimedia proficiency levels, challenges, and training needs of the target participants. The survey instrument was reviewed by experts in educational technology, instructional design, and assessment, and a pilot test was conducted achieving a Cronbach's Alpha of 0.75 for reliability. The majority of respondents exhibited an intermediate proficiency in multimedia, commonly employing visual aids such as images, videos, and slideshows in their instructional approaches. Although many of them were confident in their ability to use multimedia, a significant percentage recognized that they need additional training and support, particularly in content creation and editing. Key barriers identified include time constraints, limited resources, and technology accessibility, highlighting the significance of focused interventions and infrastructure support. Teachers acknowledged the significant role of multimedia in enhancing student learning, demonstrating a strong inclination toward future integration and participation in professional development workshops. The findings highlight the need for targeted interventions and infrastructure support to facilitate the effective integration of multimedia tools in educational settings. The following recommendations are made in light of these findings and conclusions: Implement tailored training programs to enhance teachers' multimedia proficiency, with focus on interactive teaching techniques; allocate funds for essential multimedia tools and technologies; and offer sufficient technical assistance to ensure a seamless integration.

Keywords: multimedia skills, pedagogical practices, student engagement, teacher training.

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1. Introduction

Multimedia integration has become essential to creating a dynamic and engaging learning environment in educational practices. According to Guan et al (2018), multimedia is defined as the integration of various media types, including text, symbols, images, audio, video, and animation, to enhance comprehension and retention through the utilization of technology. The concept of multimedia learning is focused on the premise that, when delivering information to a crowd, a harmony of conveying meaning, knowledge, and information with text and visuals is more effective than using text alone (Roberts, 2018).

Multimedia plays a fundamental and vital function in facilitating the teaching and learning process at the elementary school level. It enhances the effectiveness and success of the educational experience (Shilpa & Sunita, 2016). Researches have consistently shown the benefits of multimedia in the learning process, especially in primary schools. The variety of studies indicated that incorporating multimedia in primary education could heighten student engagement, boost student drive, enhance comprehension of concepts, and elevate student academic performance (Saputra & Salim, 2021). Notably, animations have been proven to effectively stimulate learners' interests and enhance the overall learning experience (Clark, 2008). Moreover, the incorporation of videos and images not only fosters engagement but also bolsters students' cognitive skills. In addition, utilizing multimedia application tools for teaching and learning offers several advantages: (1) Converting abstract concepts into tangible content, (2) presenting significant information efficiently within a limited timeframe and with minimal effort, (3) cultivating students' active participation and enthusiasm for learning, and (4) providing teachers with a means to gauge students' progress in the learning journey (Guan et al., 2018). Furthermore, multimedia in learning needs to be interactive to foster student participation, wherein learning interactions transpire between students and multimedia. As stated by (Leow & Neo, 2014), the utilization of interactive multimedia enables students to comprehend concepts proficiently.

The integration of multimedia technology into education presents a wealth of opportunities for both teachers and students to unleash their creativity. It expands the horizons of professional and research responsibilities while simultaneously demanding higher standards of teacher training and their aptitude for incorporating computer technology into their professional practice (Kotiash, et al., 2022). Multimedia, with its ability to engage multiple senses – sight, hearing, and touch – offers a compelling and effective approach to teaching and learning. This multisensory experience makes multimedia a game-changer for both educators and students (Zulfitriah, 2020).

Primary school teachers have a big influence on children' perceptions of technology and learning since they are frequently their first point of contact with the students. The degree of teachers' proficiency with multimedia technology influences students' appreciation of its inclusion in the classroom. Primary school teachers expressed a strong willingness to employ multimedia in the classroom (Shilpa & Sunita, 2016). They contend that by adding excitement, relatability, and enjoyment to the learning process, multimedia enhances student learning. Furthermore, the research of (Bakhtiar, 2018) showed how multimedia instruction might be employed in primary schools to enhance the learning environment. When theme learning activities used multimedia instructional elements, students demonstrated a high level of understanding and expertise. To guarantee the best possible use of these resources throughout the teaching and learning process, it is necessary to evaluate and improve the multimedia skills of primary school instructors.

Multimedia technology integration in literacy instruction requires a thorough approach based on scientific learning theories. Children who utilize multimedia technologies engage with visual stimuli, assess digital content or images displayed on displays, do online research, seek guidance from teachers, and convey their learning goals. (Aslam et al., 2023) claims in their study that this strategy is a useful way to achieve learning goals. Consequently, it becomes essential to use this strategy to support multimedia literacy acquisition.

By incorporating visual components like images and animations, multimedia technology integration into literacy education improves student learning. Multimedia's visual appeal plays a major role in the learning process; the more visually appealing the information, the more motivated students are to study, which in turn affects their academic achievement (Peng et al., 2021). Moreover, multimedia learning resources are highly efficient in preventing student disengagement during courses due to their engaging, interactive, and aesthetically pleasing character. This, in turn, leads to increased motivation and enhanced comprehension of the subject matter (Mutlu-Bayraktar, 2024).

As digital technologies progress at a swift pace, primary school teachers should be proficient in multimedia instruction in order to engage and educate students effectively. However, a significant number of primary school teachers face challenges in developing, utilizing, and incorporating multimedia effectively into their teaching practices. The study of Saputra & Salim (2021) and Abdulrahman et al. (2020) have recognized issues such as teachers' lack of confidence in using multimedia tools, misconceptions of teachers about learning multimedia, a lack of training on how to use and develop multimedia materials, and restricted access to technology and multimedia facilities, among others. Findings revealed a number of justifications for the underutilization of multimedia in the classroom by teachers were revealed. Among these were the insufficient resources such as hardware, software or infrastructure to acquire and maintain multimedia devices, the scarcity of accessible information such as guides or tutorials to fully understand the concept of multimedia learning, the limited understanding of the types of software used to create educational multimedia materials, and the difficulty to develop multimedia resources for use in the classroom since many of them lacked the necessary technical skills (Saputra & Salim 2021). Furthermore, in order to streamline the multimedia preparation process, adapt to each student's unique needs, and create multimedia features that stimulates students' interests and influence their motivation to learn, computer proficiency is necessary for the effective use of multimedia development (Désiron et al., 2025). It is therefore crucial to identify these barriers in order to

provide tailored support that eventually enables primary school teachers to fully utilize multimedia while also addressing their specific needs.

This research study seeks to address these challenges and bridge the gap between the current level of multimedia skills among primary teachers in nearby municipalities in Camarines Sur Region V, Philippines and the growing demand for multimedia integration in educational settings. By focusing on the multimedia proficiency of primary school teachers, this research contributes to the broader framework of advancing inclusive education, thereby fostering a more equitable and sustainable educational landscape in line with Sustainable Development Goal (SDG) 4, quality education for all. This study aims to specifically:

1. assess the multimedia proficiency and confidence levels in producing multimedia content for teaching among primary school teachers,
2. determine the barriers faced in integrating multimedia into teaching, and
3. identify the area in which teachers' multimedia skills most need to be improved.

This study aids school administrators to better understand the challenges teachers encounter when employing multimedia in teaching. They can help teachers improve their skills by providing targeted support and training. The insights of the study can be used by teachers to improve their multimedia instruction, giving students more engaging and dynamic learning experiences. Parents, policymakers, community members, and researchers can also use the study's findings to support schools in improving teaching with multimedia, leading to a greater vigor and inclusive learning environment for all students.

2. Methodology

This study employed a descriptive research design to examine the multimedia proficiency of primary school teachers and the challenges they encounter in integrating multimedia into their teaching practices. The design allowed the researchers to describe the respondents' profile, proficiency levels, confidence in creating multimedia content, barriers to integration, and areas that require further professional development.

The participants of the study were one hundred eleven primary school teachers from nearby municipalities in Camarines Sur, Region V, Philippines. Their profile was described in terms of sex, age range, and years of teaching experience. A structured, self-administered questionnaire served as the primary data-gathering tool, consisting of both close-ended questions to capture quantitative data and open-ended questions to elicit qualitative insights regarding teachers' experiences and training needs. Convenience sampling was employed, involving teachers who voluntarily agreed to participate.

The research instrument underwent validation by experts in assessment and evaluation, educational technology, multimedia, and instructional design to ensure content validity. A pilot test was conducted, yielding a Cronbach's Alpha of 0.75, which indicated acceptable reliability. Prior to data collection, the researchers secured the necessary approvals from concerned offices and provided participants with an orientation on the purpose and objectives of the study.

The data collected were analyzed using descriptive statistics such as frequencies and percentages for the quantitative component, while responses to open-ended questions were

analyzed thematically. The results of both analyses were integrated to generate a comprehensive understanding of teachers' multimedia skills and needs. These findings serve as the basis for proposing a tailored action plan aimed at strengthening multimedia integration in classroom instruction.

3. Results

The study examined the multimedia competence of primary school teachers in selected municipalities of Camarines Sur, Philippines. Specifically, it assessed participants' demographic characteristics, multimedia proficiency, types of multimedia used in teaching, confidence in creating multimedia content, barriers to multimedia integration, training needs, perceptions of the importance of multimedia, technology access, and future plans for multimedia integration.

3.1 Demographic Profile of the Participants

The demographic characteristics of the respondents are presented in Tables 1–3. As shown in Tables 1 and 2, most respondents were female (94%), while 6% were male. In terms of age, 16% were between 22 and 34 years old, 40% were 35–44 years old, 34% were 45–54 years old, and 10% were 55 years old and above.

Table 1. Demographic Profile of Respondents According to Sex

Sex	Frequency	Percentage (%)
Male	7	6
Female	104	94
Total Participants	111	100

Table 2. Demographic Profile of Respondents According to Age

Age Bracket	Frequency	Percentage (%)
22 to 34 years old	18	16
35 to 44 years old	44	40
45 to 54 years old	38	34
55 years old and above	11	10
Total Participants	111	100

Regarding teaching experience (Table 3), 24% had less than five years of teaching experience, 20% had 5–9 years, 35% had 10–19 years, 20% had 20–29 years, and 2% had more than 30 years of experience.

Table 3. Demographic Profile of Respondents According to Teaching Experience

Years of Teaching Experience	Frequency	Percentage (%)
Less than 5 years	27	24
5 to 9 years	22	20
10 to 19 years	39	35
20 to 29 years	22	20
30 years and above	2	2
Total Participants	111	100

3.2 Multimedia Proficiency

The multimedia proficiency levels of the respondents are shown in Figure 1. Most teachers reported an

intermediate level of multimedia proficiency (67%), followed by beginners (25%) and advanced users (8%).

Figure 1. Current Level of Multimedia Skills

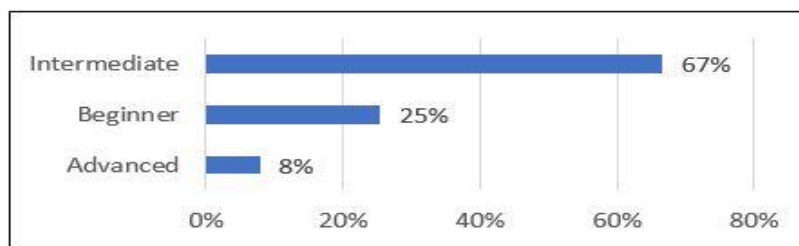


Table 4 presents multimedia proficiency according to age group. Advanced users were most common among teachers aged 35–44 years (14%) and 22–34 years (11%). Advanced users were less common among teachers aged 45–54 years (3%), while none

were recorded among teachers aged 55 years and above. Across all age groups, the majority of respondents were classified as having intermediate proficiency.

Table 4. Multimedia Proficiency Levels of Teachers by Age Group

Age Group	Beginner	Intermediate	Advanced
22 to 34 years old	11%	78%	11%
35 to 44 years old	18%	68%	14%
45 to 54 years old	32%	66%	3%
55 years old and above	55%	45%	0%

Figure 2 shows the multimedia resources used by teachers in classroom instruction. Images were the most frequently used multimedia resource (86%), followed by slideshows and videos, each utilized by

approximately three-fourths of the respondents. Audio recordings and animations were used less frequently.

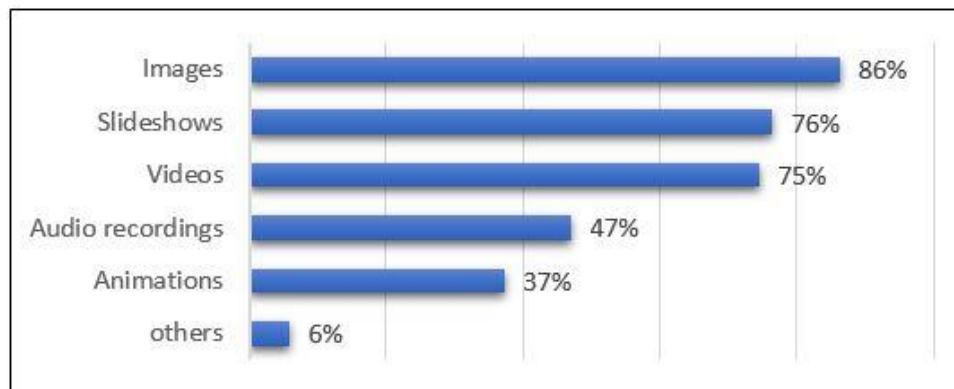
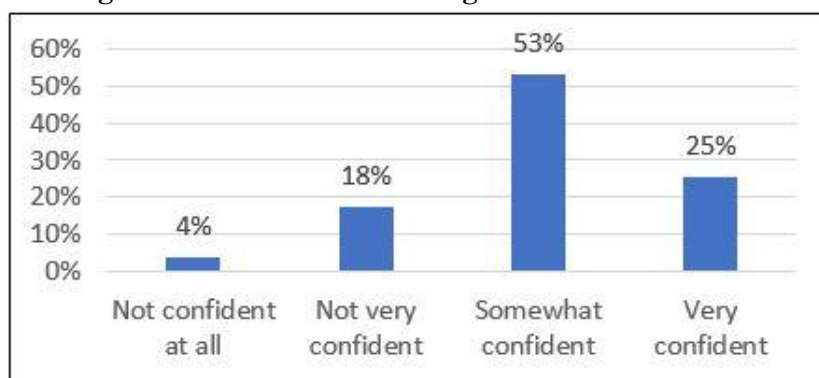
Figure 2. Types of Multimedia Used in Teaching

Figure 3 presents respondents' confidence in creating multimedia content. More than half (53%) reported being somewhat confident, while 25% indicated they

were very confident. Eighteen percent reported being not very confident, and 4% were not confident at all.

Figure 3. Confidence in Creating Multimedia Content

The distribution of confidence by age group is shown in Table 5. Teachers aged 22–34 years had the highest proportion of respondents who were very confident

(39%), whereas none of the teachers aged 55 years and above reported being very confident.

Table 5. Confidence in Creating Multimedia Content by Age Group

Age Group	Not Confident at all	Not very Confident	Somewhat Confident	Very Confident
22 to 34 years old	0%	11%	50%	39%
35 to 44 years old	0%	25%	52%	23%
45 to 54 years old	11%	8%	53%	29%
55 years old and above	0%	36%	64%	0%

3.3 Barriers to Multimedia Integration

The barriers encountered by teachers in integrating multimedia into teaching are summarized in Table 6. The most frequently reported barriers were lack of

time or training (53%) and limited resources (43%). Lack of access to technology was identified by 27% of respondents, while 4% cited internet connectivity and other related concerns.

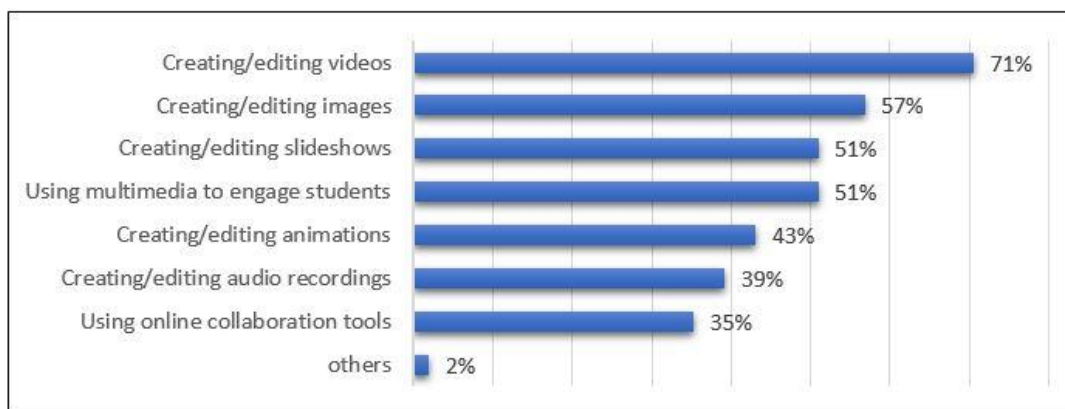
Table 6. Barriers to Incorporating Multimedia into Teaching

Barriers	Percentage (%)
Lack of time or training	53
Limited resources	43
Lack of access to technology	27
Others	4

3.4 Areas Needing Additional Training

Figure 4 presents the multimedia areas where teachers expressed the greatest need for training. The highest priorities were creating and editing videos (71%),

creating and editing images (57%), creating and editing slideshows (51%), using multimedia to engage students (51%), and creating and editing animations (43%).

Figure 4. Areas Needing More Training or Support

As shown in Table 7, most respondents (86%) considered multimedia very important in enhancing student learning. Twelve percent rated it as somewhat

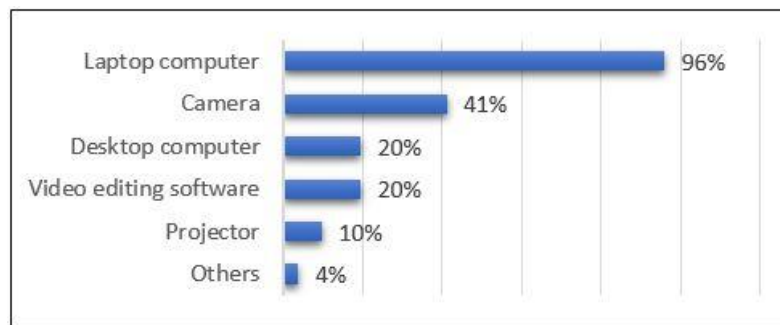
important, while only 2% considered it not very important. None of the respondents indicated that multimedia was unimportant.

Table 7. Perceived Importance of Multimedia in Enhancing Student Learning

Importance Level	Percentage (%)
Very important	86
Somewhat important	12
Not very important	2
Not important at all	0

Figure 5 presents respondents' access to technology. Laptop computers were the most accessible device (96%), followed by cameras (41%), desktop

computers (20%), video editing software (20%), projectors (10%), and other technologies such as interactive displays (4%).

Figure 5. Technology Access

Teachers consistently indicated their intention to increase the use of multimedia in future teaching by incorporating videos, animations, interactive slideshows, educational games, simulations, and multimedia-based projects.

Respondents also expressed interest in participating in professional development activities focusing on PowerPoint, Excel, video editing, multimedia production, and practical hands-on workshops.

Additional comments emphasized the need for improved internet connectivity, updated ICT equipment, and increased opportunities for training. Some respondents also identified time constraints as a challenge to participating in professional development activities.

4. Discussion

The findings indicate that the participating teachers generally possess intermediate multimedia competence, suggesting that they have acquired basic operational skills but still require further development to effectively create and integrate multimedia resources into classroom instruction. This finding is consistent with previous studies reporting that teachers are generally comfortable using common multimedia tools but often require continued professional development to maximize their instructional potential (Saputra & Salim, 2021, Désiron et al., 2025).

The age-related differences observed in multimedia proficiency and confidence suggest that younger and mid-career teachers tend to demonstrate greater familiarity with multimedia technologies than older teachers. This may reflect greater exposure to digital technologies during teacher preparation or more frequent use of technology in professional practice.

Nevertheless, the predominance of intermediate proficiency across all age groups indicates that multimedia competence remains a continuing professional development need regardless of age.

The widespread use of images, slideshows, and videos demonstrates that teachers primarily utilize multimedia resources that are readily available and relatively easy to prepare. In contrast, the lower utilization of animations and audio materials may indicate limited technical skills, insufficient software access, or greater production complexity. Similar patterns have been reported in previous studies where teachers favored simpler multimedia formats over more advanced interactive media.

Although most respondents reported being somewhat or very confident in creating multimedia content, the identified training needs reveal that confidence does not necessarily equate to advanced competence. Teachers expressed strong interest in learning video editing, animation, multimedia production, and student engagement strategies, suggesting a desire to move beyond basic presentation tools toward more interactive instructional materials.

The barriers identified, particularly lack of time, limited training opportunities, insufficient resources, and inadequate technology access, highlight institutional challenges that may hinder effective multimedia integration. These findings support previous literature emphasizing that successful technology integration depends not only on teacher competence but also on adequate infrastructure, administrative support, and continuing professional development. (Abdulrahman et al., 2020; Aslam et al., 2023)

The overwhelmingly positive perception of multimedia's importance in enhancing student learning demonstrates teachers' readiness to adopt technology-enhanced instruction. Combined with their strong interest in future training, these findings provide empirical support for designing structured capacity-building programs that address identified competency gaps while strengthening institutional support systems.

5. Conclusion

The study highlights that age and teaching experience play a significant role in shaping teachers' confidence and skills in multimedia integration. Younger and mid-career teachers generally demonstrate higher proficiency and confidence, while older teachers may face greater challenges in adopting multimedia tools effectively. These differences underscore the need for age-responsive professional development programs that provide tailored support, particularly for those who may be less adept with technology. At the same time, many teachers still exhibit only a moderate level of proficiency, which shows a clear need for further skill development and enhancement. This reinforces the importance of focused training and professional development initiatives that can empower teachers across all age groups to harness the full potential of multimedia in their teaching practices.

Albeit the widespread preference for visual aids such as slideshows, images, and videos, there is an ample scope for integrating a wider variety of multimedia forms. Diversifying teaching strategies to incorporate interactive simulations, instructional games, and other multimedia elements could improve student engagement, encourage deeper understanding, and promote a more stimulating learning environment.

Nonetheless, teachers face notable challenges in effectively integrating multimedia into their teaching, mainly due to limited resources, time constraints, and

insufficient technology access. Addressing these infrastructure gaps and providing holistic support systems, including access to professional development opportunities, is imperative to facilitate a seamless integration of multimedia in educational settings.

The study also highlights a strong consensus among teachers about the crucial role of multimedia in improving student learning. This acknowledgment signifies a collective commitment to continuous learning and the adoption of innovative pedagogical approaches. By embracing multimedia's ability to engage, inform, and inspire, teachers can design more dynamic and effective learning experiences for primary school learners.

It is recommended that comprehensive training programs be designed and implemented in order to address the specific needs and skill gaps identified in the study. These include programs in enhancing teachers' proficiency in creating and editing diverse multimedia formats, including videos, image, and animations as well as additional workshops, hands-on sessions, and specialized training in tools such as PowerPoint, Excel, video editing, and multimedia creation.

Furthermore, the school should allocate resources to increase access to essential multimedia tools and technologies, such as video editing software, cameras, and interactive displays. In addition, it is important to provide reliable internet connectivity, modern ICT devices, and sufficient time for training to support teachers in developing their skills. Equally important is ensuring the availability of adequate technical support to address issues related to technology integration, thereby enabling teachers to maximize the effective use of multimedia in their teaching practices.

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Author Declaration

The authors declare there are no conflicts of interest.