

Transforming education: A qualitative look at multimedia's impact on educators and learners in tertiary education

Cabanas, Gian Paolo Martin

Commission on Higher Education, University of Northern Philippines, Tamag, Vigan City, Ilocos Sur, Philippines (giancabanas@unp.edu.ph)

Doles, Lady-luz G.

Department of Education, Ag-agrao National High School, Ag-agrao, Sta. Maria Ilocos Sur, Philippines (ladyluzdoles15@gmail.com)

Lagera, Jennifer Q. ✉

Commission on Higher Education, Ilocos Sur Polytechnic State College, Santiago, Ilocos Sur, Philippines (jennifer.lagera@ispsc.edu.ph)

Laurente, Randel P.

Department of Education, Tay-ac National High School, Tay-ac, Bantay, Ilocos Sur, Philippines (laurentrandel77@gmail.com)



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Abstract

This qualitative study examines the transformative potential of multimedia integration on the teaching and learning experiences of educators and learners in tertiary education. Through in-depth interviews and observations, the research explores how multimedia tools and resources influence pedagogical approaches, student engagement, and overall learning outcomes. Findings reveal that educators perceive multimedia as a catalyst for diversifying instructional methods, fostering active learning, and catering to diverse learning styles. Learners report increased motivation, deeper understanding of complex concepts, and enhanced critical thinking skills through multimedia-enriched learning environments. However, challenges such as technical constraints, copyright issues, and the need for adequate training are identified as potential barriers to successful multimedia integration. The study concludes by emphasizing the importance of institutional support, professional development, and a thoughtful approach to multimedia selection and implementation to maximize its benefits in tertiary education. By shedding light on both the opportunities and challenges associated with multimedia use, this research contributes valuable insights for educators and institutions seeking to harness the power of multimedia to enhance teaching and learning experiences.

Keywords: multimedia, tertiary education, qualitative research, pedagogy, student engagement, learning outcomes

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1. Introduction

The use of multimedia technology has become a major transformational force in the constantly changing global environment of education. In their investigation of media literacy in the digital age, Buckingham and Sefton-Green (2018) emphasize the significant influence of multimedia on information interaction, communication, and learning. This change is seen in educational settings all around the world and is consistent with larger patterns that the United Nations Educational, Scientific, and Cultural Organization (UNESCO) has noted in its advocacy of technology-enhanced learning. In an era marked by unrelenting technological advancement, higher education is undergoing a significant transformation. The growing incorporation of multimedia tools and resources into teaching methods and the educational process is at the core of this change. This research delves deeply into this dynamic interaction, aiming to shed light on how multimedia is essentially changing the roles of educators and learners both inside and outside of the Philippine environment.

Recent Philippine studies have consistently highlighted both the benefits and challenges of ICT and multimedia integration in higher education. For instance, studies in Philippine State universities reveal that technology integration improves instructional delivery and enhances student engagement, yet its implementation remains constrained by limited resources, inadequate training, and unequal access to digital tools (Marcial, 2020; Gaboy et al., 2020). Similarly, Morales et al. (2021) emphasize that while ICT integration is already embedded in many Philippine higher education institutions, its effectiveness largely depends on teachers' readiness, institutional support, and the availability of appropriate technological resources. More recent findings also confirm that post-pandemic shifts in Philippine universities have intensified the use of digital and multimedia platforms, but persistent barriers such as connectivity issues and pedagogical adjustment continue to affect teaching effectiveness (Goles et al., 2024). Sasota et al. (2021) found that teachers' willingness, technological skills, and access to digital tools significantly influence successful technology integration in Philippine classrooms. Similarly, Cayetano and Caballes (2021) reported that multimedia learning environments can improve cognitive engagement and instructional effectiveness among Filipino learners. These local realities provide an important grounding for understanding multimedia integration within the Philippine educational context. They suggest that while global trends strongly advocate for digital transformation in education, the Philippine experience is shaped by contextual limitations that influence how technology is adopted and sustained in actual classroom practice.

The transformational power of multimedia is well suited to assist tertiary education, which is a hub of innovation. Multimedia technologies go beyond conventional educational limits, as Evans (2007) highlights, and they provide interesting, interactive, and learner-centered experiences. This aligns with Prensky's (2001) notion of "digital natives," implying that today's students possess a natural capacity to navigate surroundings rich in multimedia. Multimedia integration is changing higher education in a way that is unprecedented in its dynamic setting. Traditional ideas of teaching and learning are being challenged by the integration of multimedia technologies into curriculum, classrooms, and assessment procedures. This opens up new opportunities for student-centered, interactive, and captivating educational experiences. Studies like Gourav (2012) and Mukherjee (2018), which explore the viewpoints of educators and reveal a complex web of variables impacting the use of multimedia in higher education, have led to a blossoming of research on this topic. These studies paint a picture of a landscape characterized by excitement about multimedia's potential to improve learning as well as worries about implementation hurdles, which might range from technological difficulties to the requirement for pedagogical reorientation.

At the same time, studies that examine the student experience—like Vagg et al. (2020)—present a complex picture of how multimedia affects undergraduate education. Although students frequently acknowledge the

benefits of multimedia in terms of increased accessibility and engagement, they also voice concerns regarding possible diversions, information overload, and the necessity of assistance in navigating the huge digital environment. This emphasizes how crucial it is to carefully and purposefully include multimedia, making sure that it enhances rather than replaces conventional instructional methods.

The current qualitative study builds on this strong body of research by digging deeply into the transformational power of multimedia on tertiary education. Through exploring the experiences of teachers and students in a variety of subject areas, we hope to illustrate the complex ways that multimedia is changing the face of education. Our study takes a context-sensitive approach, acknowledging that the effects of multimedia are not constant but rather vary widely based on the particular subject, educational objectives, institutional culture, and the wide range of student learning styles and preferences (Selwyn, 2016).

Despite the growing body of research on technology integration and multimedia use in education, existing studies in the Philippines have primarily focused on technological readiness, ICT competencies, and quantitative assessments of technology adoption. Limited studies have explored the lived experiences of both educators and learners regarding the transformative role to multimedia technologies in tertiary education using a qualitative approach. Furthermore, few studies have examined how multimedia simultaneously influences instructional practices, learner engagement, accessibility, and educational experiences across different academic disciplines. This study addresses this gap by providing an in-depth qualitative examination of the experiences and perceptions of educators and students in Philippine higher education institutions regarding the integration of multimedia technologies. The findings contribute context-specific insights that may guide instructional practices, institutional policies, and future research in multimedia-enhanced learning.

Unlike previous Philippine studies that primarily examined ICT readiness, technology acceptance, and quantitative assessments of technology integration, this study provides a qualitative and context-specific understanding of how multimedia technologies reshape both teaching and learning experiences in tertiary education. By simultaneously examining the perspectives of educators and students across different academic disciplines, the study contributes new insights into the pedagogical, institutional, and learner-related dimensions of multimedia integration in Philippine higher education.

The researchers looked at how teachers were using multimedia technologies into their lessons, the difficulties they faced, and the creative ways they were using multimedia to enhance student learning through in-depth interviews, focus groups, and observations. In addition, the researchers looked into how students see and use multimedia across their academic careers and how it affects their overall learning objectives, motivation, teamwork, and capacity for critical thought.

The results of this study contained practical implications for educators, administrators, and policymakers at all levels, in addition to adding to the expanding body of scientific literature on multimedia in education. Through the illumination of the intricate relationship between technology, pedagogy, and student learning, evidence-based solutions for multimedia integration may be developed to optimize its potential to improve educational experiences. Furthermore, the knowledge gained from this study will have broad ramifications outside of the academic world. Navigating the benefits and problems of the digital era will need an understanding of multimedia's influence on learning and communication, as it keeps influencing numerous facets of society, including the workplace, civic involvement, and cultural expression. The ultimate objective of this research is to further our knowledge of how multimedia impacts our education, workplaces, and social interactions with the outside world. This will pave the way for a day when technology will empower people and enhance their lives. Additionally, the researchers will be guided by the relevant concepts to the research.

2. Methodology

Selection and Study Site - The higher education institutions (HEIs) in District 1 of the Province of Ilocos Sur, Philippines, shall be the sites of this study. One of the top HEIs in Ilocos Sur, the University of Northern Philippines

(UNP), is one of several HEIs spread over the numerous municipalities that comprise this region. The specific HEIs will be selected using criteria sampling (Patton, 2002), ensuring that the chosen universities meet certain parameters relevant to the study aims. HEIs in District 1 of Ilocos Sur will be chosen according on established criteria. The HEIs must first be situated physically inside the district's borders. Secondly, the research seeks to include institutions with diverse backgrounds and proficiencies in integrating multimedia, spanning from those with established programs to others who are just starting to utilize these technologies. Third, a variety of academic programs should be available at the chosen HEIs to enable an investigation into the use of multimedia in various fields.

Finally, the selected schools need to agree to take part in the study and grant access to pertinent data sources, such as instructors, students, classrooms, and institutional records. The selection of key informants will be based on their experience and competence. These key informants will include college students and teachers who are actively involved in the usage or implementation of multimedia at their respective institutions. The informants will be selected to reflect a wide range of demographic features, such as gender, age, academic discipline, years of teaching experience for faculty members, and years of attendance for college students at the mentioned HEIs. The purpose of this study is to obtain a thorough knowledge of the complex nature of multimedia integration in the context of tertiary education in District 1, Ilocos Sur, by purposively choosing HEIs and key informants based on these criteria.

Data Collection Procedure - The current case study will use an accurate and multifaceted approach to data collecting, utilizing numerous approaches to get a nuanced and full knowledge of the phenomena being studied. By utilizing a variety of data sources and viewpoints, this methodological triangulation (Flick, 2018) will improve the validity and trustworthiness of the results. To obtain an extensive understanding of multimedia integration in higher education, a comprehensive and varied methodology will be used for the data gathering in this case study. Through the integration of several data sources and viewpoints, this triangulation of methodologies will improve the validity and dependability of conclusions. To get the perspectives and experiences of key informants—faculty and students—in-depth, semi-structured interviews will be held. This will enable a thorough investigation of each person's viewpoints and driving forces (Rubin & Rubin, 2012). The study will examine multimedia tools used in teaching and learning, such as videos, online modules, and presentations, in place of doing in-person observations in classrooms. This will offer verifiable proof of the multimedia's use and connection with learning goals (Lee & Owens, 2004). In order to comprehend the larger institutional environment and variables impacting multimedia use, relevant institutional documents, such as course syllabi and technology regulations, will also be examined (Bowen, 2009). This multidisciplinary method guarantees a thorough and nuanced knowledge of the events under investigation and is in line with known best practices in qualitative research (Creswell & Poth, 2018; Flick, 2018). It does this by integrating interviews, artifact analysis, and document analysis.

Credible research is characterized by robustness, which indicates the strength and defensibility of findings and guarantees that they are well-supported and difficult to ignore. This resilience is further enhanced by data triangulation, which uses numerous lines of evidence. Confidence in the results is increased when information from several sources, such as records, artifacts, and interviews, comes together to produce a coherent tale. This suggests the findings are not just the result of a single approach. For example, in a research on multimedia use in education, the argument for multimedia's beneficial effects is strengthened by converging data from several sources showing enhanced student involvement and knowledge. Yet data triangulation isn't only about verifying presumptions that already exist. Differences in information from different sources can be just as illuminating, highlighting subtleties and inspiring more research. If low utilization statistics in the same research are contrasted with favorable student perceptions, this might reveal access restrictions, enhancing our knowledge and guiding useful solutions. Every data source also has intrinsic advantages and disadvantages. Through the use of various sources, researchers can minimize bias and mistake by offsetting these constraints. In the end, stakeholders and the research community are more inclined to accept triangulated conclusions that are based on a larger variety of data. This is particularly important for applied research since the results have a direct bearing on how decisions are made. Data triangulation, as shown by Carter et al. (2014), may greatly improve the rigor and reliability of

research by validating patterns, spotting discrepancies, and enhancing confidence in the findings.

To put it simply, data triangulation is the process of carefully choosing and combining evidence from a variety of sources to create a thorough and reliable understanding of the phenomenon being studied. This results in the production of high-caliber research that can effectively guide practice and policy.

Ethical Consideration - The study is dedicated to maintaining strict ethical guidelines in order to protect the rights, respect, and welfare of each and every participant. Following ethical guidelines is crucial while doing qualitative research, especially in educational settings where there may be power disparities and vulnerabilities (Tracy, 2019). Beyond only getting informed permission, ethical concerns are a comprehensive strategy that stresses beneficence, fairness, and respect across the whole study process (Tolich et al., 2021). The possibility of power disparities between participants in this study especially students and researchers are recognized, and it will be aggressively addressed. There will be steps made to guarantee that participation is completely voluntary and free from undue influence or pressure. Participants will be made aware of their free withdrawal policy from the study at any moment. Additionally, the research design will make an effort to reduce participant pain or potential damage, and support systems will be in place to handle any issues that may come up. In addition, the study will value the opinions and voices of participants in an effort to empower them.

With the knowledge that their contributions are appreciated and will be handled with respect, participants will be encouraged to share their experiences and thoughts in an honest and open manner. The study's goal and procedures will be made evident to participants, and the research team will make sure they are aware of both the possible advantages and disadvantages of taking part. Furthermore, by appreciating their opinions and views, the study will work to empower participants. Open and honest sharing of experiences and thoughts will be encouraged among participants, who will be assured that their contributions are respected and will be handled with respect. Throughout the process, the research team will be transparent, outlining the goals and procedures of the study in detail and making sure that participants are aware of both the possible advantages and hazards of taking part. Prior to data collection, informed consent forms were provided to all participants. The purpose of the study, confidentiality measures, voluntary participation, and the right to withdraw at any stage were clearly explained. Written consent was obtained from all participants before their participation in the study.

The objective of this study is to establish a secure and courteous atmosphere for all participants by integrating ethical standards into every aspect of the research design and data gathering. In addition to being compliant with accepted ethical standards, this method strengthens the validity and reliability of the study findings by encouraging a cooperative and powerful research partnership.

Mode of Analysis - A tried-and-true, adaptable technique for finding, examining, and summarizing patterns (themes) in data is thematic analysis (Nowell et al., 2017). The major technique for qualitative data analysis in this case study will be theme analysis, which will be conducted using a rigorous and systematic methodology.

Thematic analysis offers a structure for classifying and analyzing qualitative data, leading investigators through a sequence of actions to guarantee an exhaustive and methodical examination. In order to obtain a full understanding of the participants' narratives and experiences, the first step in the process is becoming familiar with the data by thoroughly reading through the interview transcripts, artifacts, and papers. This first phase prepares the groundwork for later coding, which involves identifying and labeling pertinent data segments with descriptive codes to capture important concepts and ideas. These codes are then combined to create prospective themes, which are then repeatedly improved upon and verified to make sure they remain accurate and pertinent in comparison to the original data. Depending on the study topics and current theoretical frameworks, researchers can use an inductive or deductive method when using theme analysis because of its versatility. This research will mostly use an inductive technique, meaning that topics will arise naturally from the data instead of being predetermined. Nonetheless, a certain amount of deductive analysis could also be used to investigate particular pre-established ideas or theories related to multimedia integration. (Braun & Clarke, 2019).

The study team will first go over the acquired data, which includes institutional papers, multimedia artifacts, and interview transcripts, in great detail. A thorough comprehension of the context and content will be made easier by this immersion in the material, setting the stage for further research.

The first step in the data processing process is coding, which involves identifying and labeling important textual or visual portions with appropriate codes. Open coding was initially conducted to identify meaningful units of information from interview transcripts, institutional documents, and multimedia artifacts. Similar codes were subsequently grouped into categories and organized into broader themes that represented recurring patterns in participants' experiences. The construction of overarching themes, which reflect recurrent patterns and concepts in the data, will be facilitated by these codes. Through iterative comparison with the original data, the themes will be constantly improved and confirmed to guarantee their correctness and applicability. Each topic shall have a name that captures its essence and makes interpretation easier. In addition to theme analysis, a case-oriented methodology will be employed to examine the data inside each participating Higher Education Institution independently. This will make it possible to find distinctive themes and patterns that are particular to the setting of each institution (Thomas, 2015). The results will then be compared and contrasted across other institutions using a cross-case analysis, which will highlight the similarities and differences in multimedia integration practices and experiences (Yin, 2018).

To improve the rigor and validity of the results, the research team will remain reflective throughout the analytic process, admitting their own prejudices and presumptions and participating in peer debriefing (Lincoln et al., 2018). This dual analytic technique will offer a thorough and nuanced knowledge of the varied nature of multimedia integration within District 1, Ilocos Sur's tertiary education scene. It combines thematic analysis with a case-oriented viewpoint.

3. Result and Discussion

3.1 Theme: Empowering Educators, Engaging Learners

The findings of this qualitative study offer a thorough examination of the theme "The Transformative Power of Multimedia Technologies" in the context of redefining teaching and learning in higher education, with an emphasis on the ways in which these technologies are changing the roles, attitudes, and achievements of teachers and students in a variety of subject areas. Several sub-themes that each represented a distinct aspect of this main issue surfaced as a result of meticulous data collecting and analysis.

3.2 The Evolving Roles of Educators: From Disseminators to Facilitators

The findings reveal a significant shift in the roles of educators, moving away from traditional lecture-based instruction and towards more active and student-centered approaches. Educators reported using multimedia tools to create interactive lessons, foster collaboration, and provide personalized feedback. This shift was particularly evident in disciplines that traditionally relied heavily on lectures, such as the programming and multimedia subjects. This shift reflects a broader recognition of the importance of student engagement and active learning in higher education. By leveraging multimedia tools, educators can create more dynamic and interactive learning experiences that cater to diverse learning styles and preferences. This not only improves student outcomes but also empowers educators to become facilitators of knowledge construction rather than mere dispensers of information.

3.3 Shifting Perceptions and Expectations of Learners: Digital Natives in the Classroom

Learners said that they much preferred multimedia-rich learning settings because they were more engaging, motivated, and understood. They expected instructors to make good use of these technologies because they saw multimedia as a natural and essential component of their educational experience. This was seen across a variety of subject areas, with ICT students appreciating simulations and interactive representations the most. The results

emphasize how important it is for teachers to modify their methods in order to suit the changing needs of their pupils. Since they have grown up with technology, the "digital native" generation expects it to be easily incorporated into their education. Teachers who use multimedia technologies and carefully integrate them into their lessons may produce more interesting and relevant learning experiences that appeal to today's students.

3.4 The Impact of Multimedia Technologies on Educational Outcomes: Enhancing Accessibility and Inclusivity

Learners said that they much preferred multimedia-rich learning settings because they were more engaging, motivated, and understood. They expected instructors to make good use of these technologies because they saw multimedia as a natural and essential component of their educational experience. This was seen across a variety of subject areas, with ICT students appreciating simulations and interactive representations the most. The study discovered a link between enhanced student learning outcomes and the utilization of multimedia technology. Using multimedia resources in their learning improved student knowledge and retention of the course material, according to their reports. The study also demonstrated how multimedia may improve inclusion and accessibility, especially for students with different learning requirements or impairments.

3.5 The Impact of Multimedia Technologies on Educational Outcomes: Enhancing Accessibility and Inclusivity

Numerous multimedia applications in several academic fields were found in the study. While educators in the humanities and social sciences used interactive maps and timelines to bring historical events and cultural settings to life, educators in ICT subjects reported employing simulations and visualizations to improve comprehension of complicated ideas. Multimedia techniques have been utilized in the arts to produce virtual shows and digital portfolios. Multimedia technologies are adaptable and have the potential to improve learning in a wide range of subject areas, as seen by their numerous uses. A crucial element in the effective integration of tools and platforms is their capacity to be tailored to the unique requirements of certain disciplines. This emphasizes how crucial it is to give teachers the tools and training they need to successfully integrate multimedia into their unique educational environments.

3.6 Critical Perspectives and Ethical Considerations: Addressing the Digital Divide and Information Overload

In spite of the study's overwhelming favorable findings on attitudes toward multimedia technologies, participants voiced worries about information overload and the digital divide. Higher education's growing dependence on multimedia may disadvantage students from poorer socioeconomic backgrounds or those with less access to technology. Additionally, students may find it challenging to distinguish trustworthy sources from unreliable ones and to hone their critical thinking abilities due to the deluge of information that is readily available online. These results highlight the necessity of approaching the integration of multimedia technologies in higher education with a critical and complex perspective. Even though these technologies have many advantages, it's important to deal with any possible problems they may cause. This entails putting laws into place to guarantee all students have fair access to technology and creating educational programs that instruct kids on how to use it safely and successfully.

3.7 Practical Educational Implications

The findings of this study have important implications for higher education institutions. For educators, the results emphasize the need for continuous professional development in multimedia integrations, instructional design, and digital pedagogy. For students, multimedia-enhanced learning environments can improve engagement, accessibility, collaboration, and understanding of complex concepts. For administrators and institutions, the findings highlight the importance of investing in technological infrastructure, faculty training programs, and policies that promote equitable access to digital learning resources. Furthermore, curriculum developers may utilize the findings to design learner-centered instructional strategies that effectively integrate multimedia technologies across academic disciplines.

4. Conclusion

In general, this study offers insightful information about how multimedia technologies are changing higher education. Institutions can decide how best to use multimedia technologies into their teaching and learning processes by knowing the changing responsibilities of educators, learner expectations, and the effects on educational results. This research emphasizes the need for ongoing collaboration between educators, instructional designers, and technology experts to leverage the full potential of multimedia in higher education, creating more engaging, inclusive, and effective learning environments. The findings are significant for educators because they demonstrate how multimedia technologies can support learner-centered instruction and improve classroom engagement. For students, multimedia enhances accessibility, motivation, and understanding of learning materials. For educational institutions, the study provides evidence supporting investments in technology infrastructure, faculty development programs, and policies promoting effective multimedia integration in higher education.

Recommendations - Based on the findings of the study, it is recommended that educators participate in training programs, seminars, and workshops to enhance their proficiency in using multimedia tools and platforms. Such professional development opportunities can equip teachers with the necessary skills to design engaging, interactive, and learner-centered instructional materials that effectively utilize the capabilities of multimedia technologies. Moreover, educators should ensure that multimedia materials are accessible to all learners, including students with disabilities. Providing captions, transcripts, and alternative formats can help accommodate diverse learning needs and promote inclusive education. In designing multimedia resources, teachers should consider the varying abilities, preferences, and learning styles of their students. It is also important for educators to recognize that multimedia serves as a tool to support and enrich the teaching and learning process rather than replace traditional instruction. A balanced approach that integrates technology-mediated activities with meaningful face-to-face interactions should be maintained to foster effective learning experiences. Furthermore, the institution should provide adequate technological infrastructure, including reliable high-speed internet connectivity, multimedia-equipped classrooms, and access to appropriate software applications and licenses for both students and faculty members. These resources are essential to support the effective integration of multimedia in teaching and learning. Finally, the institution is encouraged to support and promote faculty research on the effectiveness of multimedia technologies across various academic disciplines and learning environments. Encouraging such research initiatives can contribute to evidence-based practices and continuous improvement in the use of multimedia as an instructional tool.

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5. References

- Al-Emran, M., Mezhuyev, V., & Kamaludin, A. (2018). Technology acceptance model in M-learning context: A systematic review. *Computers & Education, 125*, 389–412.
<https://doi.org/10.1016/j.compedu.2018.06.008>
- Ayres, P., & Sweller, J. (2014). The split-attention principle in multimedia learning. In R. E. Mayer (Ed.), *The Cambridge handbook of multimedia learning* (2nd ed., pp. 206–226). Cambridge University Press.
<https://doi.org/10.1017/CBO9781139547369.011>
- Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice

- researchers. *The Qualitative Report*, 13(4), 544–559. <https://doi.org/10.46743/2160-3715/2008.1573>
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, 11(4), 589–597. <https://doi.org/10.1080/2159676X.2019.1628806>
- Buckingham, D., & Sefton-Green, J. (2018). Multimedia education: Media literacy in the age of digital culture. In D. R. Hobbs & P. Mihailidis (Eds.), *The international encyclopedia of media literacy* (pp. 285–305). Routledge. <https://doi.org/10.4324/9781351292924-14>
- Carter, N., Bryant-Lukosius, D., DiCenso, A., Blythe, J., & Neville, A. J. (2014). The use of triangulation in qualitative research. *Oncology Nursing Forum*, 41(5), 545–547. <https://doi.org/10.1188/14.ONF.545-547>
- Cayetano, D. C., & Caballes, D. G. (2021). Measuring cognitive load level in a multimedia learning environment towards the development of instructional materials. *Sapienza: International Journal of Interdisciplinary Studies*, 3(1), 1–12. <https://doi.org/10.51798/sijis.v3i1.232>
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications.
- Crowe, S., Cresswell, K., Robertson, A., Huby, G., Avery, A., & Sheikh, A. (2011). The case study approach. *BMC Medical Research Methodology*, 11, Article 100. <https://doi.org/10.1186/1471-2288-11-100>
- Evans, T. (2007). The challenges of multimedia learning. *Computers in Human Behavior*, 23(4), 1994–2005.
- Flick, U. (2018). *An introduction to qualitative research* (6th ed.). SAGE Publications.
- Flyvbjerg, B. (2014). Case study. In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE handbook of qualitative research* (4th ed., pp. 301–316). SAGE Publications.
- Gaboy, R. G., Mabalay, M. C., Mananghaya, M. E., Mercado, M. G. M., & Romblon, B. M. (2020). Coping with the new norm: ICT-pedagogy integration awareness and competencies of TEI faculty. *Journal of Research, Policy & Practice of Teachers and Teacher Education*, 10(2), 1–15. <https://doi.org/10.37134/jrptte.vol10.2.4.2020>
- Goles, C., Sanchez, J. M., Sumalinog, G., Mananay, J., & Alejandro, I. M. (2024). Beyond the pandemic: The changing landscape of technology integration in higher education in Central Visayas, Philippines. *CTU Journal of Innovation and Sustainable Development*, 16(1), 150–159. <https://doi.org/10.22144/ctujoisd.2024.262>
- Gourav, A. (2012). Multimedia in higher education: A survey of faculty perceptions and usage. *The Electronic Journal of e-Learning*, 10(2), 119–128.
- Lee, K., & Owens, D. (2004). *Multimedia-based instructional design: Computer-based training, web-based training, distance broadcast training, and education*. Pfeiffer.
- Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2018). Paradigmatic controversies, contradictions, and emerging confluences, revisited. In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE handbook of qualitative research* (5th ed., pp. 97–128). SAGE Publications.
- Marcial, D. E. (2020). Pedagogical integration of information and communication technology among teacher educators in Central Visayas, Philippines. *Silliman Journal*. <https://su-journal.su.edu.ph>
- Mayer, R. E. (2009). *Multimedia learning* (2nd ed.). Cambridge University Press. <https://doi.org/10.1017/CBO9780511811678>
- Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative research: A guide to design and implementation* (4th ed.). Wiley.
- Morales, M. P. E., Avilla, R. A., Butron, B. R., Ayuste, T. O. D., Masangcay, D. B., & Laureano, R. A. (2021). Technology integration traditions, transitions, and best practices in Philippine higher STEAM education. *Philippine Journal of Science*, 150(5), 1265–1278. <https://doi.org/10.22437/jiituj.v8i1.31807>
- Mukherjee, A. (2018). Multimedia learning in higher education: A review of literature. *Journal of Educational Technology & Society*, 21(1), 206–220.
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis. *International Journal of Qualitative Methods*, 16, 1609406917733847. <https://doi.org/10.1177/1609406917733847>
- Patton, M. Q. (2002). *Qualitative research & evaluation methods* (3rd ed.). SAGE Publications.
- Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, 9(5), 1–6.

- Saldaña, J. (2016). *The coding manual for qualitative researchers* (3rd ed.). SAGE Publications.
- Sasota, R. S., Cristobal, R. R., Sario, I. S., Biyo, J. T., & Magadia, J. C. (2021). Will–skill–tool model of technology integration in teaching science and mathematics in the Philippines. *Journal of Computers in Education*, 8, 443–464. <https://doi.org/10.1007/s40692-021-00185-w>
- Selwyn, N. (2016). *Is technology good for education?* Wiley.
- Rubin, H. J., & Rubin, I. S. (2012). *Qualitative interviewing: The art of hearing data* (3rd ed.). SAGE Publications.
- Thomas, G. (2015). *How to do your case study: A guide for students and researchers*. SAGE Publications.
- Thomas, G. (2017). *How to do your research project: A guide for students in education and applied social sciences*. SAGE Publications.
- Tolich, M., & Tumilty, E. (2021). Do quantitative and qualitative research have similar ethical considerations? Finding your ethical research self. In *Finding Your Ethical Research Self* (pp. 67–82). Routledge. <https://doi.org/10.4324/9780429056994-5>
- Tracy, S. J. (2019). *Qualitative research methods: Collecting evidence, crafting analysis, communicating impact* (2nd ed.). Wiley.
- UNESCO. (n.d.). ICT in education. <https://www.unesco.org/en/education/digital>
- Vagg, S., Nicholls, K., & Moore, M. (2020). Multimedia learning in undergraduate education: A systematic review and meta-analysis. *Educational Research Review*, 31, 100345.
- Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). SAGE Publications.