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Television-Based Teaching in the Pacific Area in Northern Samar :Inputs for Sustainable Integration

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Abstract

This study evaluated the implementation of Television-Based Teaching (TBT) in selected public elementary schools in the Pacific towns of Northern Samar and generated strategic inputs for its sustainable integration. Anchored on Mayer's Cognitive Theory of Multimedia Learning, Bandura's Social Cognitive Theory, Stufflebeam's CIPP Evaluation Model, Rogers' Diffusion of Innovations Theory, Sweller's Cognitive Load Theory, Media Richness Theory, and the Quality Teaching Model, the study employed a descriptive-evaluative research design guided by the Input-Process-Output framework. Data were collected through a researcher-made questionnaire administered to public elementary school teachers directly involved in TBT implementation. Proportional sampling was used to obtain respondents from selected schools in Laoang, Palapag, Mapanas, Gamay, and Lapinig, and the data were analyzed using weighted mean and descriptive statistical techniques. Findings revealed that schools generally possessed functional television hardware, satisfactory broadcast signal strength, and adequate power supply to support TBT. Teachers demonstrated satisfactory to high levels of pedagogical competence in curricular contextualization, technology-enhanced classroom management, and instructional facilitation. Synchronization between televised lessons and classroom instruction was generally effective, contributing to learner engagement and instructional continuity. However, implementation remained affected by unstable signal reception, power interruptions, limited technical support, transportation difficulties, insufficient maintenance resources, lack of standardized troubleshooting procedures, and heavy ICT coordinator workloads. The study concluded that TBT remains a viable and effective instructional approach for geographically isolated schools but requires stronger instructional, technical, and administrative support systems to ensure long-term sustainability. Recommended interventions include infrastructure enhancement, localized instructional materials, preventive maintenance programs, technical support mechanisms, dedicated funding, and continuous monitoring and evaluation. The study supports Sustainable Development Goal (SDG) 4: Quality Education by promoting equitable access to learning opportunities in geographically isolated communities and SDG 10: Reduced Inequalities by addressing educational disparities associated with geographic and infrastructural limitations. Its sustainability impact lies in strengthening institutional capacity, instructional continuity, and long-term educational resilience in resource-constrained schools.

Keywords: Broadcast Signal Strength, Curricular Contextualization, Instructional Facilitation, Pedagogical Competence, Sustainable Integration, Television-Based Teaching, Technology-Enhanced Classroom Management

1. Introduction

Television-Based Teaching (TBT) has emerged as a practical instructional strategy for geographically isolated public elementary schools in the Pacific towns of Northern Samar, where unstable internet connectivity, rugged terrain, and limited technological infrastructure constrain access to digital learning. Supported by Department of Education (DepEd) policies, TBT utilizes curriculum-aligned televised lessons within face-to-face classroom settings, where local teachers facilitate learning, provide reinforcement, and contextualize instruction. Despite its potential to improve educational access and equity, its implementation remains affected by synchronization issues, infrastructure limitations, signal instability, and logistical constraints. This study evaluated the implementation of TBT in selected public elementary schools in Northern Samar and generated strategic inputs for its sustainable integration.

1.1 Background of Television-Based Teaching in Rural Public Elementary Schools

The increasing reliance on technology in education has exposed disparities between urban and rural schools. In the Pacific towns of Northern Samar, where internet access remains unreliable, Television-Based Teaching (TBT) serves as a viable alternative for delivering standardized instruction. Under DepEd Order No. 012, s. 2020 and related policy issuances, television-based instruction was institutionalized to support learners in geographically isolated and disadvantaged communities. However, implementation challenges persist, including the mismatch between televised lesson schedules and the distribution of Learning Activity Sheets (LAS) and Self-Learning Modules (SLMs), weak broadcast signals, unstable power supply, and limited technical support. These challenges affect the continuity and effectiveness of classroom instruction and highlight the need for localized strategies to sustain TBT implementation.

1.2 Themes and Insights from Television-Based Teaching Implementation

Literature emphasizes that successful TBT implementation depends on adequate television hardware, reliable signal reception, stable electricity, competent teachers, synchronized instructional schedules, effective facilitation methods, and strong institutional support. Studies indicate that instructional technologies become effective only when schools maintain functional infrastructure and sustainable operational systems. Research further shows that unstable signals, power interruptions, equipment deterioration, transportation barriers, and limited technical support reduce the effectiveness of media-assisted instruction. Teacher competence likewise remains critical. Effective instructional delivery, curricular contextualization, and technology-enhanced classroom management contribute to learner engagement and improved learning outcomes. Similarly, synchronized schedules and learner-centered facilitation strategies help maintain instructional continuity and maximize the benefits of televised lessons. Existing studies also reveal that inadequate funding, limited professional development opportunities, excessive ICT workloads, and the absence of standardized maintenance procedures hinder the sustainability of technology-assisted learning programs.

1.3 Local, National, and Global Context of Television-Based Teaching

Globally, educational systems have increasingly adopted technology-assisted instruction to improve access and learning continuity. However, digital inequities remain pronounced in rural communities where infrastructure limitations prevent the effective use of internet-based learning platforms. Nationally, the Philippines institutionalized television-based instruction through the Basic Education Learning Continuity Plan and related DepEd policies to support learners in remote areas. Locally, schools in the Pacific towns of Northern Samar face distinct challenges associated with mountainous terrain, coastal geography, poor signal reception, power instability, and logistical barriers that directly affect TBT implementation. These conditions necessitate context-specific interventions that address the realities of geographically isolated schools.

1.4 Theoretical and Conceptual Basis for Television-Based Teaching

This study was anchored on Mayer's Cognitive Theory of Multimedia Learning, which posits that learners process visual and verbal information through separate cognitive channels and learn more effectively when multimedia content is carefully structured. The theory supports the role of classroom teachers in managing cognitive load during televised instruction (Mayer, 2001). Bandura's Social Cognitive Theory further explains learning through observation and modeling. In TBT classrooms, both the televised teacher and the classroom teacher function as instructional models, reinforcing learning through demonstration, guidance, and feedback (Bandura, 1986). The study was also grounded in Stufflebeam's CIPP Evaluation Model, which evaluates educational programs through Context, Input, Process, and Product dimensions. This framework provided the basis for assessing school conditions, available resources, implementation processes, and outcomes related to TBT sustainability (Stufflebeam & Zhang, 2017). Additional support was drawn from Rogers' Diffusion of Innovations Theory, which explains how educational innovations are adopted and sustained within organizations (Rogers, 2003); Sweller's Cognitive Load Theory, which emphasizes the importance of instructional design in preventing cognitive overload (Sweller, 1988); Media Richness Theory, which highlights the strengths and limitations of television as a communication medium (Daft & Lengel, 1986); and the Quality Teaching Model, which focuses on intellectual quality, learning environment, and instructional significance (NSW Department of Education, 2003). The study adopted an Input-Process-Output (IPO) framework wherein school profiles, teacher competence, synchronization, facilitation methods, technical hurdles, and implementation challenges served as inputs analyzed to generate strategic recommendations for sustainable TBT integration.

1.5 Research Gaps and Rationale

Although extensive literature discusses technology integration, teacher competence, educational infrastructure, and instructional delivery, limited research has specifically examined the sustainable implementation of face-to-face Television-Based Teaching in geographically isolated public elementary schools. Existing studies often focus on internet-based technologies and digital innovations, leaving a gap in understanding how low-tech instructional tools such as educational television can be effectively sustained in resource-constrained settings. Moreover, limited evidence exists regarding the synchronization of televised lessons with classroom instruction, the interaction between infrastructure and pedagogical practices, and the operational realities faced by teachers, school heads, and ICT coordinators in Northern Samar. This study addressed these gaps by providing an empirical evaluation of TBT implementation and generating localized recommendations for long-term sustainability.

1.6 Alignment with Relevant Sustainable Development Goals (SDGs)

The study aligns primarily with SDG 4: Quality Education by promoting equitable access to quality learning opportunities for learners in geographically isolated and disadvantaged communities. It also supports SDG 10: Reduced Inequalities by addressing educational disparities resulting from geographic isolation and infrastructure limitations. Through the sustainable use of television-based instruction, the study contributes to efforts aimed at ensuring inclusive and accessible education for all learners.

1.7 Importance of the Study to Multidisciplinary Sustainability

The study contributes to educational sustainability by identifying strategies that support continuous instructional delivery in resource-constrained schools. It promotes institutional sustainability through evidence-based recommendations for policy implementation, teacher development, and resource management. The findings also contribute to community and socio-economic sustainability by helping ensure that learners in remote communities receive consistent and quality education despite infrastructural limitations. Furthermore, the study supports sustainable educational planning by providing practical inputs for school leaders, policymakers, and education stakeholders seeking to strengthen long-term instructional resilience in geographically isolated areas.

2. Material and methods

2.1 Research Design

The study utilized a descriptive-evaluative research design anchored on the Input-Process-Output (IPO) model. The Input component examined school profile variables, including television hardware availability, broadcast signal strength, and power supply stability; teacher pedagogical competence in instructional delivery, curricular contextualization, and technology-enhanced classroom management; synchronization of class schedules; instructional facilitation methods; technical and logistical hurdles; and challenges encountered during TBT implementation. The Process component involved proportional sampling, questionnaire-based data collection, descriptive-evaluative analysis, computation of mean scores, and statistical interpretation of findings. The Output component focused on the development of strategic inputs for the sustainable integration of Television-Based Teaching (TBT) in public elementary schools. The conceptual framework illustrated the relationship between the identified input variables, the methodological processes used for data collection and analysis, and the resulting strategic recommendations intended to strengthen the long-term implementation of TBT.

2.2 Locale of the Study

The study was conducted in the municipalities of Laoang, Palapag, Mapanas, Gamay, and Lapinig in Northern Samar. These municipalities were selected because they represent diverse geographical and administrative conditions within the province. Schools were categorized into Central and Non-Central schools to facilitate comparison. Central schools were generally located in town centers and coastal areas with better road accessibility and greater access to government resources and TBT equipment. These schools served as reference sites for evaluating TBT implementation in relatively resource-rich environments. In contrast, Non-Central schools were situated in remote coastal, mountainous, and hilly areas where challenges related to electricity, signal reception, and accessibility were more pronounced. Comparing these school categories enabled the study to examine the influence of geographical isolation on technology utilization and maintenance. The selected schools also varied in size. Large schools served as educational and administrative hubs with at least 30 teachers, medium-sized schools functioned as secondary educational centers, while small schools primarily served remote communities. All participating schools were recipients of the DepEd Computerization Program (DCP), ensuring the availability of basic TBT equipment and allowing the study to focus on implementation conditions rather than equipment provision.

2.3 Respondents of the Study

The respondents were public elementary school teachers from selected schools in Laoang, Palapag, Mapanas, Gamay, and Lapinig. These teachers were directly involved in the implementation of Television-Based Teaching and were therefore considered appropriate sources of information regarding its effectiveness, challenges, and sustainability. Respondents came from both central and non-central schools across the five municipalities, ensuring representation from diverse educational settings and geographical conditions. Their experiences provided valuable insights into the implementation of TBT in both accessible and geographically isolated learning environments.

2.4 Sample and Sampling Procedure

The study population consisted of 439 teachers distributed across the five districts of Laoang, Palapag, Mapanas, Gamay, and Lapinig. A proportional sampling technique was employed to ensure that each district was represented according to its actual population size. This method minimized overrepresentation or underrepresentation and enhanced the validity of the sample. Using proportional allocation, a target sample size of 210 teachers was determined. The sample was proportionally distributed among the participating districts according to their respective teacher populations. Although full participation was not achieved, 74.8% of the selected respondents completed the survey. This response rate was considered sufficient to provide reliable and meaningful data for analysis and interpretation.

2.5 Research Instrument

Data were collected using a researcher-made survey questionnaire specifically developed to address the objectives of the study. The instrument gathered quantitative information regarding television hardware availability, broadcast signal strength, power supply stability, synchronization of televised lessons and classroom instruction, instructional quality, and teachers' pedagogical competence in instructional delivery, curricular contextualization, and technology-enhanced

classroom management. Responses were measured using a four-point Likert scale. Scores ranged from 1 to 4 and were interpreted as Poor, Fair, Satisfactory, or Outstanding. Weighted mean scores were computed to determine the level of implementation, competence, and perceptions across the measured variables.

To establish content validity, the instrument underwent expert evaluation by three specialists with backgrounds in educational leadership, research methodology, instructional technology, and educational technology integration. Their recommendations were incorporated to improve the relevance, clarity, and appropriateness of the questionnaire before administration.

2.6 Data Gathering Procedure

Prior to data collection, the researcher secured the necessary permissions from relevant educational authorities. Formal request letters were submitted to school heads, district heads, and the Schools Division Superintendent of Northern Samar. Teacher-respondents were likewise informed of the purpose, scope, and significance of the study. Following approval, the researcher personally distributed and retrieved the survey questionnaires from selected public elementary schools across Laoang, Palapag, Mapanas, Gamay, and Lapinig. Data collection was conducted within a designated period to ensure systematic and organized implementation of the study.

2.7 Data Analysis Techniques

The collected data were analyzed using descriptive statistical techniques. Responses from the survey questionnaires were quantified using the four-point Likert scale. Weighted mean was utilized to determine the extent of TBT implementation, assess teachers' pedagogical competence, and evaluate the availability and condition of instructional resources, including television hardware, signal reception, and power supply stability. Mean scores were interpreted using predetermined descriptive categories ranging from Poor to Outstanding. These statistical procedures provided the basis for describing the current status of TBT implementation and identifying areas requiring improvement.

2.8 Ethical Considerations

The study adhered to established ethical standards by protecting the rights, welfare, privacy, and confidentiality of all participants. Respondents were informed of the purpose of the study and provided informed consent before participation. Participation was voluntary, and respondents were free to withdraw at any stage without penalty. To maintain anonymity, no identifying information was attached to survey responses. All data were securely stored and accessible only to the researcher. The survey instrument was non-invasive and appropriate for the professional context of teachers. Information gathered was used strictly for academic purposes and reported only in aggregate form to prevent the identification of individual respondents or schools.

3. Results and Discussion

3.1 Pedagogical Competence of Teachers

3.1.1 Curricular Contextualization

The findings showed that teachers demonstrated satisfactory competence in curricular contextualization. They were generally able to align television-based lessons with curriculum competencies, adapt content to learners' needs, and utilize contextualized instructional strategies. The overall rating indicated that teachers could connect televised lessons with local classroom requirements and learning objectives. This finding supports the study of Tran and O'Connor, which emphasized teachers' ability to interpret and adapt curriculum standards according to learners' experiences and community realities. The result also agrees with Banzuelo and Quiñones, who noted that contextualization enhances understanding by linking lessons to everyday experiences. Likewise, the findings affirm Caingcoy et al., who emphasized that culturally responsive instruction promotes learner engagement, inclusivity, and academic achievement.

3.1.2 Technology-Enhanced Classroom Management

The results revealed that teachers effectively managed classroom behavior and participation during television-based instruction. Strong performance was observed in ensuring equitable learner access to technology, establishing classroom routines, and maintaining discipline during televised lessons. However, teachers reported some difficulties in monitoring learners under viewing conditions and troubleshooting technical issues. These findings are consistent with Johler, Krumsvik, and Helgevold, who highlighted the importance of routines and teacher adaptability in technology-rich classrooms. The results also support Goagoses et al., who found that effective technology-supported classroom management improves learner engagement and participation. The observed technical difficulties align with Orbigoso and Pontillas, while Li et al. emphasized that continued professional development can strengthen teachers' competencies in managing technology-enhanced learning environments.

3.2 Synchronization of Schedules and Lesson Flow

The findings showed that teachers generally synchronized televised lessons with classroom activities effectively. They successfully aligned lesson introductions, pause-and-explain strategies, pacing, and assessment activities with television broadcasts. However, some challenges were noted in maintaining seamless transitions between lesson components. The results support Belt and Lowenthal's assertion that synchronized instructional schedules improve learning experiences and sustain learner participation. They also agree with Seidel's findings that properly timed video-based instruction enhances concentration and comprehension. Furthermore, the findings align with Polat's view that coordination between instructional materials and classroom activities contributes positively to engagement and learning outcomes.

3.3 Instructional Facilitation

The results indicated that teachers demonstrated a high level of competence in instructional facilitation. They actively monitored learners during broadcasts, provided real-time scaffolding, highlighted important concepts, facilitated post-viewing discussions, and designed activities that reinforced televised lessons. These practices transformed television viewing into an active learning experience. The findings are consistent with Maggiore et al., who emphasized the importance of facilitation practices in improving learner engagement and participation. Similarly, Skog and Pettersson highlighted the crucial pedagogical and social roles of teachers in technology-supported environments. The results also support Martin, Polly, and Ritzhaupt, who found that guided discussions, feedback, and interactive activities strengthen learner participation and instructional continuity.

3.4 Technical and Logistical Hurdles

The findings revealed that schools generally maintained operational conditions necessary for television-based instruction. However, challenges remained in signal reception, accessibility of technical support, equipment delivery, and availability of backup systems. The lowest ratings were observed in the provision of alternative power sources and emergency instructional support. These findings are consistent with Albina et al., who reported that remote schools encounter infrastructural and geographical barriers that affect educational service delivery. The results also support Wang et al., who noted that coastal environmental conditions accelerate equipment deterioration. Likewise, the challenges in technical support and transportation reflect the findings of De Fiesta and Postrano and Domingo et al. The limited availability of backup systems further supports Pangket's observations regarding the importance of alternative resources in sustaining learning continuity.

3.5 Challenges and Constraints

The results showed that schools maintained basic operational systems for TBT implementation. Security measures for television units were generally in place, and ICT personnel provided support when possible. Nevertheless, major challenges included inadequate maintenance budgets, limited professional development opportunities, absence of formal troubleshooting procedures, procurement difficulties, and heavy ICT coordinator workloads. These findings support Celeste and Nimfa, who identified insufficient funding as a major barrier to sustaining educational technology initiatives. The results also agree with Orbigoso and Pontillas, who emphasized the need for continuous professional development in technology-assisted instruction. The absence of standard troubleshooting procedures aligns with Chugh et al., while concerns regarding ICT workload support the observations of Nordmark, Augustsson, and Davidsson. Equipment protection issues likewise reflect the findings of Gonzales et al.

3.6 Proposed Strategic Inputs for Sustainable Integration of TBT

The findings indicate that sustainable TBT implementation requires strengthened instructional, technical, and administrative support systems. Although teachers demonstrated strong pedagogical competence, further localization of televised lessons through contextualized materials, indigenous knowledge integration, and local language support remains necessary. To address instructional concerns, standardized pacing guides and synchronized lesson schedules are recommended to improve lesson continuity. Technical challenges may be reduced through accessible support systems, offline repositories of televised lessons, backup power sources, and formal troubleshooting procedures. Administrative concerns require dedicated funding, continuous professional development programs, clear standard operating procedures, and stronger institutional support mechanisms. Collectively, these strategic inputs can enhance the long-term sustainability and effectiveness of Television-Based Teaching in geographically isolated and disadvantaged schools.

4. Conclusion and Recommendations

The study found that public elementary schools in the Pacific towns of Northern Samar generally possess functional television hardware, adequate power supply, and satisfactory broadcast signal strength to support Television-Based Teaching (TBT). Teachers demonstrated high pedagogical competence in instructional delivery, curricular contextualization, technology-enhanced classroom management, and instructional facilitation, contributing to sustained learner engagement and comprehension. However, the implementation of TBT remains affected by unstable signal reception, power interruptions, limited localization of instructional content, technical and logistical challenges, insufficient

maintenance resources, lack of standardized operational procedures, and heavy ICT workloads. Despite these constraints, TBT remains a viable and effective approach for delivering equitable educational opportunities to geographically isolated schools.

The Department of Education, local government units, school administrators, teachers, and ICT coordinators may strengthen the implementation of TBT by improving signal and power infrastructure, establishing preventive maintenance programs, developing localized instructional materials, providing troubleshooting guides, creating instructional pacing guides, maintaining offline learning repositories, rationalizing ICT workloads, institutionalizing standard operating procedures, allocating dedicated maintenance funds, and conducting continuous monitoring and evaluation. Future studies may further examine the effects of TBT on learner performance, compare implementation across different geographical settings, and develop localized television-based instructional materials for elementary learners.

The study was limited to selected public elementary schools in the Pacific towns of Northern Samar and focused only on Television-Based Teaching as an instructional modality. The respondents were limited to teachers directly involved in TBT implementation, excluding other stakeholders such as parents and community members. The investigation was confined to available school resources and conditions during the period of data collection and did not include other technology-based learning modalities or large-scale infrastructure interventions. Consequently, the findings are context-specific and may not be fully generalizable to other regions with different geographical, technological, and socio-economic conditions.

Compliance with ethical standards

The author declares no conflict of interest. This study received no external funding and was conducted with the cooperation of selected public elementary school teachers and school authorities in the Pacific towns of Northern Samar. Participation was voluntary, informed consent was obtained from all respondents, and data were collected through non-invasive survey procedures. All information was treated with strict confidentiality, and no identifying personal data were disclosed in the presentation or reporting of the findings.

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