

Leveraging Home Economics Through Technology: Teachers' Academic Instances

Richard M. Empimo

Abstract. This qualitative research examined how Home Economics teachers handle resource constraints by implementing technology in their classroom instruction. The research adopts phenomenology to understand how teachers employ Information and Communication Technology (ICT) in creative ways to replace essential physical tools and materials for the Home Economics curriculum. The researcher conducted both in-depth interviews and focus group discussions with selected teachers based in Davao Occidental. The research data showed three main findings, which included (1) Resource Scarcity Challenges and (2) Creative Teaching Approaches, and (3) Technology as a Substitute for Limited Materials. The lack of adequate infrastructure and limited resources did not hinder teachers who displayed creativity through independent device usage and self-learned implementation of ICT-based learning technologies. The research provides critical knowledge that benefits all stages of education, including teachers and school leaders and education policy makers, and researchers who want to enhance teaching and reduce educational resource disparities in limited locations. This research analyzes Home Economics through technology adoption observations among teachers while addressing declining resources along with ICT usage in educational settings. The study highlights the resilience and commitment of educators in navigating challenges using digital alternatives. It sheds light on the importance of ongoing professional development, institutional support, and innovative strategies in maintaining effective instruction. By understanding these adaptive measures, the study reinforces the value of ICT as not just a contingency tool, but as an element that reshapes traditional classroom experiences in Home Economics.

KEY WORDS

1. Home Economics 2. technology integration 3. resource scarcity

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1. Introduction

As a practical and skill-based course, home economics allows learners to master a wide range of life skills, from sewing to cooking, from managing their finances to managing entire homes. The qualities mentioned above not only aid development but also foster accountability, creativity, and problem-solving abilities. In leveraging home economics through technology as teachers' academic instances, since we are in the technological revolution or era and everyone is too dependent on technology, the primary benefits of leveraging technology wisely in the classroom are as follows: Technology creates many opportunities for teachers to provide innovative learning experiences for learners. An even more significant benefit is

that these learning experiences can take place regardless of the time and place, offering learners more personalized opportunities to interact with their peers and the content. Using technologies in learning strategies provides information and concise, efficient educational experiences. If properly applied, technology can supplement the deficiencies in the physical aspect of classroom delivery and thus enhance learners' performance. On a global scale, Adesoji et al., (2020) stressed that some constraints that have been increasing due to resource shortages can be tackled using new possibilities offered by the latest developments in digital technologies. Using different internet resources, acting, and online tools may help learners acquire the knowledge of performing skills needed in today's work environment. Technology can be a cost-effective substitute for lacking equipment in education, particularly in underdeveloped countries. Virtual reality has been proposed as a solution for insufficient engineering laboratories, offering a less expensive and more dynamic means of practical training. The pandemic accelerated the adoption of technological tools in education, highlighting their potential benefits beyond the crisis period (Oliveira Santos, 2024). However, challenges persist, including inadequate infrastructure and limited access to devices in public schools. To address these issues, solutions such as providing teacher training, equipping schools with technological resources, and ensuring sufficient budgets for maintenance are necessary (Akbar Noviani, 2019). While technology can enhance student learning in areas like health and motivation, it is often used as a substitute for teachers rather than transforming teaching and learning practices (Sargent Calderón, 2021). Overcoming these challenges is crucial for leveraging technology's potential in education. Learners' preferences, motivation, and engagement with digital learning resources revealed valuable insights into Home Economics. The review explores factors influencing learners'

acceptance and resistance to adopting these technological tools in their learning journey (Asare et al., 2023). Furthermore, the analysis identifies potential challenges and benefits of integrating educational apps and online platforms in Home Economics education. Ultimately, this systematic review contributes to a deeper understanding of the role of educational apps and online platforms in Home Economics learning and offers recommendations to teachers and policymakers for effective integration and enhancement of digital resources in the field. Thirty skills can be acquired through ICT use in Home Economics teaching and learning, such as scaling foods, meal planning, budgeting, selection, purchasing of foodstuffs, and preparation. Factors affecting teaching and learning Home Economics include insufficient personnel to teach practical skills, and teaching more theory than practical in the course. Azonuche (2020) concluded that since many skills can be learned in Home Economics that enable learners to be relevant to themselves and the world, training and providing ICT equipment is vital in secondary and tertiary institutions. Information and Communication Technologies (ICT) to revolutionize home economics education. ICT integration can enhance learners' access to resources, improve nutrition and home management knowledge, and develop digital literacy skills crucial for the future (Oluwagbemileke, 2024). Educational apps and online platforms have shown promise in engaging learners and improving their learning experiences in Home Economics (Asare et al., 2023). The application of digital technologies in Home Economics contributes to national development and sustainability by promoting family security and agricultural growth and addressing environmental challenges. However, limited internet access, lack of ICT facilities, and inadequately trained teachers hinder progress (Oluwagbemileke, 2024). Overcoming these challenges requires collaboration between the government, schools, communities, and the

private sector. Technology and livelihood education (TLE) in the Philippines, teachers face resource limitations, including insufficient materials, equipment, and skills (Pamor et al., 2024). Despite these constraints, some teachers purchase and use their technology to enhance instruction (Intatano, 2019). Teachers employ pedagogical diversity and technology integration to address challenges and attend training seminars (Pamor et al., 2024). Integrating Information and Communication Technologies (ICT) is crucial for 21st-century teaching. However, the Philippines is lagging behind other countries like Hong Kong in terms of ICT integration for home economics education (Limon, 2022), highlighting the urgent need for improved ICT infrastructure. Recommendations for improvement include enhancing communication, collaborating with stakeholders, and focusing on professional development and resource optimization (Pamor et al., 2024). Integrating technology in education, specifically in the home economics field in Manila faces challenges but also offers innovative solutions. Despite resource limitations, teachers in the Philippines often use personal devices to enhance instruction and reach diverse learners (Intatano, 2019). Learners at Far Eastern University-Manila generally perceive technology integration positively, finding it academically advantageous and engaging (Acuña et al., 2024). Innovative approaches, such as service learning and technology utilization, have significantly improved learners' academic performance, critical thinking, and social skills at Dela Paz National High School

(Tianio De Castro, 2024). However, obstacles remain, including insufficient ICT infrastructure and high procurement costs (Akbar Noviani, 2019). To resolve these obstacles, solutions include improving access to digital technology in schools, developing interactive learning materials, enhancing teacher skills using digital tools, and securing adequate budgets for infrastructure development and maintenance (Akbar Noviani, 2019). These strategies can help overcome resource constraints and foster comprehensive educational experiences. Teachers' competence and attitudes towards ICT significantly influence its successful implementation in private schools (Septimo and Cancio, 2024). Technology as a learning tool enhances student motivation and engagement among college learners in Davao del Norte (Paja et al., 2020). In public schools, teaching-learning resource availability moderates the relationship between digital technology knowledge and instructional supervision skills. Similarly, technological content knowledge moderates the interaction between teachers' attitudes toward digital technology and classroom supervision competence. These findings underscore the crucial role of professional development, ongoing training, and resource availability in fostering effective technology integration across various educational levels in Davao City (Butalid, 2024). The studies collectively emphasize the need for a supportive environment that enhances teachers' competence and ensures effective use of technology in teaching and learning processes.

1.1. Purpose of the Study—This study seeks to identify how technology can be substituted to overcome the challenges posed by resource scarcity in Home economics education and to establish the degree of effectiveness of digital tools, virtual simulations, and online platforms which Home economics teachers recognize if the tools in question assist in the mobilization of learners, create enjoyment for the learners, and bring about augmentations on the learning acquired in the specific subject area of Home economics education. In understanding how teachers use technology to substitute for materials not available in an educational setting, the study aims to discover best practices and how to enhance the opportunity to practice lessons given despite the

challenge of limited resources, such as equipment. The study would be based on the following areas for consideration: identification of specific technologies used by teachers, evaluation of how the technology affects learners' achievement, and evaluation of the influence of the technology on the management of resources in the class. Furthermore, the study would find out how using technologies can enhance the classroom management interventions currently applied to promote a better learning environment. By exploring these areas, the study shall offer helpful insight into how technology can be a critical factor in the fight against scarcity in Home Economics education and its implications for teaching practices. Home Economics encounters shifts and opportunities arising from the progressive integration of technology into the field of education. In a world where education is undergoing significant technological transformation, teachers are being asked to incorporate technology into their teaching methods more and more. Home Economics teachers encounter numerous challenges when integrating technology into their instruction as they try to adapt practice-based learning to a virtual environment under resource constraints and their own financial limitations. Gathering insight into how teachers deal with, embrace and evaluate the integration of modern technology in Home Economics instruction proves significant. The research aims to understand how teachers negotiate the use of technology while teaching Home Economics within limited means and to discover any unexpected lessons that can inform teaching practices. The research shall illuminate how innovative practices interact with resourcefulness and perseverance in the teaching of Home Economics.

1.2. Research Questions—To explore the evolving role of technology in Home Economics education, this study sought to examine teachers' lived experiences, coping strategies, and the educational insights gained from integrating digital tools into their academic practices. Therefore, it aimed to answer the following questions:

- (1) What are teachers' experiences leveraging home economics through technology as teachers' academic instances?
- (2) How do teachers cope with the challenges of leveraging home economics through technology within their economic responsibilities?
- (3) What educational insights can be drawn from the study?

1.3. Definition of Terms—For a more comprehensive understanding, the following terms would be defined operationally:

ICT

It is an acronym for Information and Communication Technology, a broader term for Information Technology (IT). It refers to all communication technologies, including the Internet, wireless networks, cell phones, computers, software, middleware, videoconferencing, social networking, and other media applications and services.

Home Economics

It's about home management. It covers many subjects, including human development, personal and family finance, housing and interior design, food science and preparation, nutrition and wellness, textiles and apparel, and consumer issues. Home Economics equips individuals with practical life skills essential for managing households efficiently. It promotes responsible decision-making in areas such as budgeting, meal planning, and family relationships. This subject also helps students develop a sense of self-reliance, creativity, and awareness of sustainable living practices.

1.4. Significant of the Study—

The study entitled “Leveraging Home Economics through Technology: Teachers’ Academic Instances” provides several advantages for different stakeholders within Home Economics education:

Teachers

This study gives valuable insights into how technology can help tackle the problem of limited resources in Home Economics classes. By exploring teachers’ views on the effectiveness of digital tools, teachers can discover new ways to keep learners engaged and improve learning outcomes even when physical materials are scarce. The results can assist teachers in refining their teaching methods, enabling them to create a more flexible and innovative classroom environment using technology such as online platforms and virtual simulations. Furthermore, it could motivate teachers to incorporate more

technology into their lessons, enhancing student learning experiences without relying heavily on traditional resources.

School Administrators

The research offers insights into how technology can compensate for resource limitations, potentially improving overall teaching quality in Home Economics. The findings may influence how schools allocate resources, helping administrators invest in educational technologies that enhance teaching and learning. They could also support professional development programs that train teachers to integrate digital tools effectively into their classrooms. Additionally, understanding the impact of technology on teaching practices can lead administrators to develop policies that optimize resource use and encourage innovative education methods.

1.5. Theoretical Lens—This study is anchored on three complementary theories: the Technological Pedagogical Content Knowledge (TPACK) Framework by Mishra and Koehler (2006, as cited in Santos Castro, 2021), the Diffusion of Innovation Theory (1962), and the Transactional Theory of Stress and Coping (Lazarus Folkman, 1966). TPACK provides a lens for understanding how Home Economics teachers integrate technology with content and pedagogy to deliver practical lessons in resource-limited contexts. The Diffusion of Innovation Theory explains the varying degrees to which teachers adopt and adapt technology, depending on personal, social, and institutional factors. Lastly, the Transactional Theory of Stress and Coping reveals how educators interpret and respond to the challenges they face, uncovering their coping mechanisms, whether behavioral or emotional, as they strive to deliver quality instruction. Together, these theories offer a comprehensive framework for exploring teachers’ academic instances, highlight-

ing their innovation, adaptation, and resilience in a technologically evolving educational environment. TPACK or Technological Pedagogical Content Knowledge Framework (Mishra Koehler, 2006 as cited in Santos Castro, 2021). Punya Mishra and Matthew J. Koehler of Michigan State University in 2006 first introduced the TPACK framework. This framework identifies three domains of knowledge needed to integrate educational technology successfully. This model also describes the relationship between technology, teaching, and learning, and content knowledge. In this case, it is possible because it allows practice to show how teachers in resourced-deficit situations, like in Home Economics, integrate their subject knowledge with technology for lack of materials. Whenever technology is deployed for classroom application, this framework enables one to determine how well they are being harnessed and the likely effect on teaching strategies. Outside of the classroom, technology is playing a more significant role in learners’ lives, and it can also im-

prove their comprehension of complex subjects and promote peer cooperation. Due to these advantages, the modern educational practice advises teachers to use technology in their lessons. However, many teachers encounter challenges. One of the biggest obstacles to implementing technology in the classroom is typically a need for more information about how to use it to the best advantage of learners in various subject areas. Other significant hurdles include cost, time, and access. According to the TPACK framework, specific technological tools (hardware, software, applications, associated information literacy practices, etc.) are best used to instruct and guide learners toward a better, more robust understanding of the subject matter. The three types of knowledge – TK, PK, and CK – are thus combined and recombined in various ways within the TPACK framework. Technological pedagogical knowledge (TPK) describes relationships and interactions between technological tools and specific pedagogical practices, while pedagogical content knowledge (PCK) describes the same between pedagogical practices and specific learning objectives; finally, technological content knowledge (TCK) describes relationships and intersections among technologies and learning objectives. These triangulated areas then constitute TPACK, which considers the relationships among all three areas and acknowledges that teachers act within this complex space (BryFresco, 2019). Another theory anchored this study, is diffusion of innovation theory (Roger, 1962), one of the oldest social science theories. It originated in communication and explains how, over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or social system. This theory concerns how innovations such as new technologies are assimilated and diffused among users in a given community, such as schools and teachers. It enables comprehension of how teachers use technological tools due to resource constraints, the rate of accep-

tance of new technologies, and hindrances that slow down the process, such as infrastructure or lack of training. The framework is beneficial for observing teachers' perceptions and behaviors in the context of new technologies in a resource environment. The theory identifies four key elements: innovation, communication channels, time, and social system (Hornor, 2022). Adopters are categorized into five groups: innovators, early adopters, early majority, late majority, and laggards (Scheuer, 2021). The diffusion process is influenced by the characteristics of the innovation, adopters, and social-ecological context. Factors such as relative advantage and access to technical assistance can affect adoption rates. The theory has been applied to various fields, including biodiversity conservation, which provides insights for catalyzing conservation at scale. However, the diffusion process is complex and heterogeneous, varying across time and space (Das, 2020). Another theory anchored this study is Transactional Theory of Stress and Coping (Lazarus, Folkman, 1966; as cited in Janse, 2025). The Transactional Theory of Stress and Coping (TTSC) is a framework that focuses on assessments in order to evaluate damages, threats, and challenges. The product or the result of this evaluation is a description of the process used to handle stressful situations. How individuals appraise stress and use coping mechanisms. Work-related stress is a big problem all over the world. Not only does it negatively affect the health of employees, but it also affects the productivity of organizations as a whole. Work-related stress arises when what has to be done is not in balance with the available capacity, among other things. Lazarus wrote about three types of stress management. They include dealing with stress in a problem-oriented way, dealing with stress in an emotion-oriented way and dealing with stress in an assessment-oriented manner. The different ways of dealing with stress are briefly explained below. Dealing with stress in a problem-

oriented way, problem-oriented coping refers to a person who tries to control or adapt problematic situations by seeking information, taking action, or not acting at all. Dealing with stress in an emotion-oriented way, emotion-oriented coping is also referred to as intrapsychic coping. The main aim is to reduce emotional upsets, and Dealing with stress in an assessment-oriented way, the term reassessment is used by Lazarus in two contexts. On the one hand, it relates to the evaluation process, but on the other reassessment is a coping strategy. Coping can affect stress and emotions simply making a reassessment of the situation. The Transactional Theory of Stress and Coping (TTSC) was developed by Dr. Richard Lazarus and Dr. Susan Folkman in 1966. Their framework illustrates how major life events affect human emotions. The main focus of the theory lies on cognitive assessment and dealing with stress (coping). The assessment consists of three levels: primary, secondary, and tertiary (reassessment) assessment. In the academic world of psychology, stress is defined in three ways. Hans Selye defined stress as a defense mechanism which occurs during resistance, exhaustion or danger. Stress, if long-term, can lead to adaptation disease and even death. Holmes and Rahe thought stress was a stimulus. They stated that change is al-

ways stressful, and that in certain events, such as divorces, relocations, loss of loved ones, or job, etc, an adjustment or reaction is required. Folkman and Lazarus claimed that stress is a product of interactions between a person and their environment. This theory received a lot of attention after Suzanne Kobassa used the term winter hardiness, which is a personality trait. This meant that stress, the experience of stress, and the reaction to stress, were first associated with personalities. Figure 1 below shows the perceptions of teachers in addressing resource scarcity in their class on the left side, which indicates the perspective of every teacher who has been teaching home economics and experiencing a lack of equipment and uses technological tools as compensators; on the right side tools that teachers use as compensators for lacking equipment in the classroom which indicate the tools that the teacher uses to use as a substitute to the lack of equipment in their classroom specifically in the home economic subject, and on the center challenges and coping teachers cope with the challenges of leveraging home economics through technology which indicate the struggles and coping mechanism of teacher towards addressing the scarcity of equipment in their Class and using technological tools as a substitute to this.

2. Methodology

The research method adopted in this study was a qualitative approach, specifically using phenomenology to investigate the experiences and attitudes of Home Economics teachers towards the use of technology to overcome resource deficiency. Home Economics classes, especially those in resource-limited settings, required learners to embrace the use of technology; the phenomenological research approach effectively captured this social phenomenon. This was consistent with Creswell and Poth's (2018) explanation of phenomenology, in which the researcher aimed to describe the nature of an experience as seen by the participant. The three most common qualitative methods are focus groups, in-depth interviews, and participant observation. Each method is mainly appropriate for obtaining a specific data type. In line with this, participant observation was appropriate for collecting data on naturally occurring behaviors in their natural contexts. In-depth Interviews (IDI) are optimal for collecting data on individuals' experiences, histories, and perspectives, especially when exploring sensitive topics. Moreover, focus group

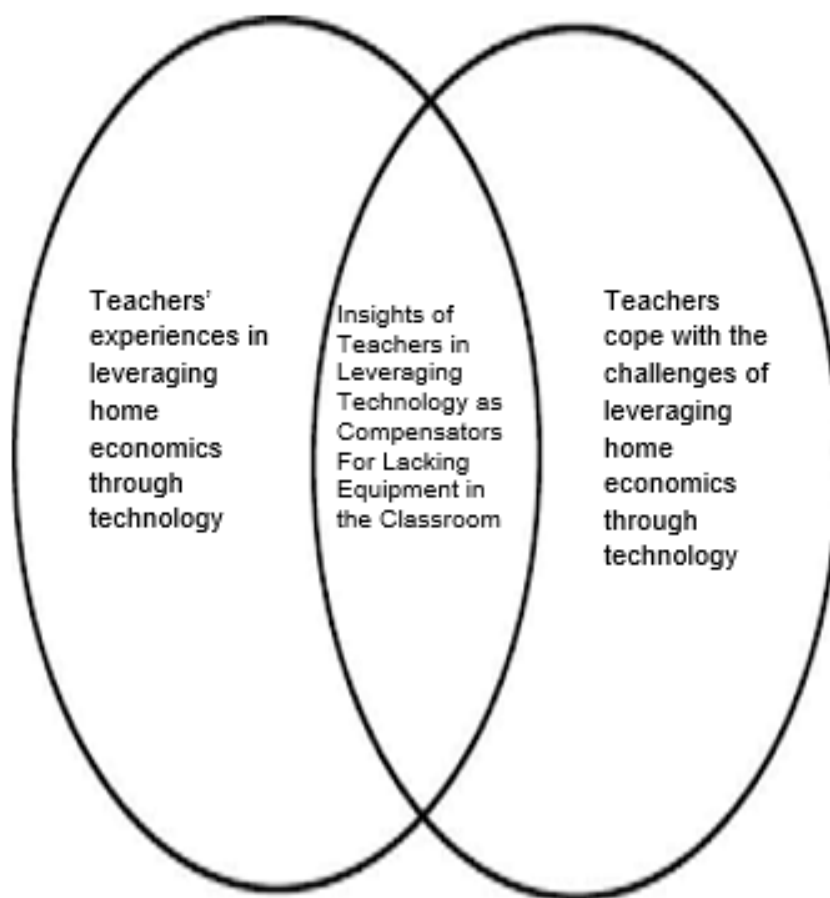


Fig. 1. The Conceptual Framework of the Study

discussions are a powerful tool for producing data on a group's cultural norms and generating broad overviews of issues and concerns of the cultural groups or subgroups represented. Creswell and Poth (2018) define phenomenology as an inquiry that asks about the structure and essence of a phenomenon's experience for people experiencing it. The goal of this research works well with this definition in trying to understand the experiences and challenges of teachers in classroom management. Furthermore, Rajasinghe (2019) advised researchers to be prepared for a more comprehensive and in-depth examination than the provided description suggested. Moreover, he also proposed that the information collected should be seen as only the "tip of the iceberg."

2.1. Philosophical Assumptions—The study was guided by specific philosophical assumptions that informed the data gathering, analysis, and interpretation. Ontologically, the research acknowledged the existence of multiple realities shaped by individual experiences of Home Economics teachers. This assumption emphasized that no single, objective truth could fully represent the experiences of all participants. Each teacher's perspective was considered valid and essential in understanding the broader phenomenon. Epistemologically, knowledge was co-constructed through in-depth interviews, recognizing the subjective relationship between the researcher and participants. This interactive process allowed for a richer, more nuanced understanding of how technology is used in resource-limited settings. Axiologically, the researcher's values were acknowledged and reflected upon throughout the study. Methodologically, the study employed a qualitative, phenomenological approach to deeply explore participants' lived experiences.

Ontological Assumption

In this study, the ontological assumption acknowledged that multiple realities existed based on the unique lived experiences of Home Economics teachers. These realities were socially constructed and influenced by the teachers' individual contexts, challenges, and interactions with technology in resource-limited educational settings. The research embraced these diverse perspectives to capture the complexity of their academic instances. I gathered evidence of various perspectives by utilizing the participants'

voices and interpretations through extensive quotes and themes reflected in their statements. I coded and analyzed the participants' responses to reveal both the interconnectedness and distinctiveness of their experiences. To ensure the reliability of the results and maintain the authenticity of the responses, I carefully coded the data and consistently reflected on my personal biases throughout the research process.

Epistemological Assumption

In this study, I recognized that knowledge was constructed through close and meaningful interaction with the Home Economics teachers. I maintained ongoing engagement with participants to acquire firsthand data that reflected their individual experiences. My approach emphasized understanding how teachers perceived and made sense of leveraging technology in their teaching, acknowledging that knowledge emerged from their unique perspectives and lived realities. The study assumes that the researcher interacts closely with the participants to acquire firsthand information about the inquiry.

Axiological Assumption

I committed to respecting the dignity and significance of all data collected from the participants throughout the study. I acknowledged that the information was deeply personal and value-laden, understanding that my own assumptions and values inevitably influenced the study's design, data collection, and analysis. To address this, I continuously reflected on my biases to reduce their impact on the research findings. I made sure to honor and respect the par-

ticipants' perspectives by carefully analyzing their responses in the context of their lived experiences and viewpoints. This approach not only upheld ethical standards but also embraced the inherently value-driven nature of qualitative research. By doing so, I aimed to produce trustworthy and meaningful insights while maintaining integrity and sensitivity to the participants' contributions.

Rhetorical Assumption

In this study, I applied a qualitative phenomenological research method to deeply explore the experiences, challenges, and insights of Home Economics teachers as they utilized technology to overcome the deficiency of classroom materials. I used personal voice and em-

phasized qualitative research criteria such as credibility, transferability, dependability, and confirmability to maintain the rigor and trustworthiness of the study. Through close engagement with participants, I sought to authentically capture and interpret their lived experiences, focusing not only on what they experienced but also on how they experienced it. This interpretive approach allowed me to describe the teachers' realities from their own perspectives, prioritizing their voices and meanings throughout the inquiry. By doing so, I aimed to produce rich, meaningful data that reflected the complexities and nuances of leveraging technology in resource-limited Home Economics classrooms.

2.2. Qualitative Assumptions—The study utilizes a qualitative phenomenological method and an in-depth interview research technique for data collection. Rutledge and Hogg (2020) characterize in-depth interviews as a qualitative research data collection procedure used to acquire exhaustive data on an individual's experiences, perspectives, and feelings concerning a particular subject. Additionally, in-depth interviews are a prevalent data collection procedure in qualitative research that highlights the depth

of understanding of factual or abstract information (Osborne Grant-Smith, 2021). Qualitative research interviews typically involve recording the responses of one or more participants to broad, open-ended inquiries. The phenomenological approach emphasizes exploring the impact of a phenomenon on an individual. This approach prioritizes meticulous attention to detail and precisely identifies a phenomenon that an individual encounters in a specific environment. It can also recognize behavioral trends within a group of people (Lim, 2024).

2.3. Design and Procedure—The study utilizes a qualitative research design, using phenomenology to interpret participants' experiences. Depending on the conditions, the participants will be invited to participate in a focus group discussion conducted virtually or face-to-face. Afterward, themes and mutual patterns from the participants' responses will be extracted and analyzed. I will choose this research design as it would focus on teachers' experiences in applying technology as a substitute for lacking classroom equipment. Moreover,

the collected data would be analyzed using the thematic analysis method in phenomenological research. More importantly, the participants would sign an informed consent form before commencing the data collection process, guaranteeing no risks for them in this study. Also, they could withdraw as participants at any point if they consider it uncomfortable. Lastly, ethical considerations and safety health protocols would be followed throughout the study. Qualitative research is an iterative process that aims to understand complex human experiences and

behaviors by getting closer to the phenomenon studied (Aspers Corte, 2019). It encompasses various data collection methods, including interviews, observations, and focus groups, with the researcher serving as a crucial instrument in this process (Awasthy, 2019). Unlike quantitative research, which focuses on what happened, qualitative research provides insight into the meaning and understanding of experiences. It is characterized by its ability to capture the dynamism and intricacy of human life in complex socio-political environments (Awasthy, 2019). The approach emphasizes making new significant distinctions and improving understanding within the scientific community (Aspers Corte, 2019). While there is no single concise definition, qualitative research is valued for its ability to further understanding of clinical decision-making and patient care and for giving voice to patients and careers in research. I utilized a semi-structured interview guide in this study to provide a more in-depth interview experience. The tool was used as a manual to interview suitable participants. Audio recorders were utilized in the interview process to facilitate easy transcription and interpretation. The interview questions were constructed to answer the research ques-

tions and provide supplementary inputs from the participants to help produce meanings and themes for this study. In addition, I sought guidance from research specialists to address the validity concerns of my design and methodology. Expert validators also checked and validated the interview guide used. The sampling method used to select the research participants was based on the proposals of the research panels. To identify qualified teachers to participate in the study, I utilized a referral system based on specific criteria. This sampling method is also known as purposive sampling. Purposive sampling is a set of non-probability sampling techniques that includes selecting sample units depending on the possession of specific characteristics (Nikolopoulou, 2022). He added that purposive sampling relies on the researcher's decision to determine which individuals, circumstances, or events would produce the most critical data for achieving the study's objectives. In other words, it chooses its participants "on purpose." Furthermore, the identity of the participants was given utmost importance and respect under the "ethics of research." Thus, I observed professionalism in interacting with the research participants.

2.4. Research Participants—The participants of this study would be Home Economics teachers from Cristina Calnantoc Rosario National High School in Malita South, Davao Occidental. The researcher would purposively select ten (10) teachers with at least three years of experience in Home Economics education. Purposive sampling is appropriate as it allows for selecting participants with direct experience in the topic under investigation, ensuring that the data collected is rich and relevant

(Andrade, 2020). The study includes Ticulon National High School, Kinangan Integrated School, Clotildo Reyes Barrios Sr. National High School, and Fulong Maliona San Sr. National High School. The researcher would utilize a purposive sampling design since the participants would be chosen based on the criteria or purpose of the study. Purposive sampling is a technique in which participants are chosen based on specific characteristics pertinent to the study's objectives (Andrade, 2020).

2.5. Ethical Considerations—Ethical principles underpin the design of this research study,

which would comply with the Data Privacy Act of 2012 to ensure the confidentiality of all par-

participant information. I would strictly follow ethical guidelines regarding informed consent, voluntary participation, and the right to withdraw. To protect their identities, all participants will be given pseudonyms. I would carefully consider ethical issues concerning the participants involved in this research. The research instruments and procedures will be reviewed to ensure they do not cause harm or discomfort to any participant. Furthermore, ethical considerations are integral to the research process and must be adhered to fulfill the research study's objective of presenting factual knowledge and truth without personal biases. By upholding these ethical standards, the study ensures credibility, integrity, and respect for all individuals involved. Social Value

In this study, I aimed to contribute to improving the quality of life in society. The societal value of this research focused on teachers' experiences, challenges, and insights in leveraging technology to compensate for the lack of classroom equipment. The social concerns that drew my interest were the teachers' perceptions and difficulties in using technology as a substitute for missing educational materials. The results of this study could serve as a foundation for higher authorities to develop programs and policies that support teachers in enhancing classroom instruction and increasing student engagement.

Informed Consent

I provided an informed consent form to every participant before commencing the phenomenological research procedure and scheduling the interviews. Each participant was required to give a signed personal acknowledgment, consent, and commitment to participate in the study. The informed consent letter served several purposes: introducing the research study, providing my contact details, explaining the study's objectives, informing participants that their participation was voluntary, and outlining the information expected from the informants.

Participants were assured they could withdraw anytime without consequence, and their privacy, confidentiality, and anonymity were strictly respected throughout the study.

The Vulnerability of Research Participants

The individuals involved in this study can reliably complete the research tool as they have shown to be the leading information providers. As a result, I the researcher will ensure they can be reached using their contact details in case of any queries or uncertainties about the study.

Risks, Benefits, and Safety

The selection of participants was conducted without any involvement of bribery, coercion, or unwarranted influence. Furthermore, the respondents received the contact information of the research panelists for any study-related inquiries. If respondents experienced discomfort or inconvenience when answering questions, they were not required to respond and could request to move on to the next question. Participants were also free to withdraw from the study at any point. Moreover, I ensured the respondents' safety during the interview process. The questionnaire was distributed in a safe venue and administered conveniently to the participants. The primary ethical concern of this research was the Treaty Principle of Protection, which emphasizes respect for participants' privacy and confidentiality, minimizing possible risks. This was achieved by assigning each informant a pseudonym to prevent identification. The possibility of risk was further minimized by taking all reasonable steps to guarantee participant confidentiality.

Privacy and Confidentiality of Information

In this study, I complied with the Data Privacy Act of 2012, ensuring that participants were assured their data could not be linked back to them, thereby safeguarding their identities. Great care was taken to maintain the anonymity of data sources. Additionally, all printed materials produced from the study were securely stored. Furthermore, I resolved any concerns to

prevent conflicts of interest between myself and the participants. Misleading information and biased presentation of primary data findings were strictly avoided.

Justice

During data collection, the participants received information about my responsibilities as the researcher, as well as their responsibilities. They were also advised on the importance of providing truthful responses to the interview questions. All communication regarding the research was conducted with complete honesty. Finally, they were informed that they were the primary beneficiaries of the study's findings.

Transparency

In this study, my findings will be shared with participants and school administrators to ensure transparency once published. I the researcher can provide the results on a flash drive or other requested devices. Secondary teachers, school administrators, and curriculum developers can benefit from the study's findings and understand its significance in the field of education. Participants will be informed of their right to withdraw from the study at any time before the data collection period ends and can request to review their interview transcripts. They also have the option to correct or delete any information that could potentially identify them. I have the authority to use pseudonyms, change names, and alter non-essential dates to safeguard the participants' identities during subsequent data analysis and reporting.

Qualification of the Researcher

In this study, I had the necessary qualifications to carry out the research. I fulfilled all academic requirements, passed the comprehensive examination, and was in the process of writing the thesis to attain a master's degree. I was sufficiently qualified to conduct the study in all

aspects physically, mentally, emotionally, and financially. Furthermore, the collaboration between my adviser and me ensured the successful completion of the study.

Adequacy of Facilities

I, the researcher in this study, will finish the research within the designated timeframe using the required resources. The research panel could also enhance the paper by offering suggestions and recommendations. Moreover, I guarantee adequate funding to carry on and complete the research.

Community Involvement

In this study, I honored the participants' local traditions, culture, and perspectives. No deception was used throughout the study's implementation, particularly during participant recruitment and data collection procedures. I believed it was important to express genuine enthusiasm to encourage wholehearted participation in the study.

Plagiarism and Fabrication as the Researcher

I, the researcher in this study, maintained proper credit to authors through direct quotations and by summarizing the ideas of others in my own words. To properly understand the research context, I refrained from directly copying text from reference papers. I employed citations in every instance to indicate that the text derived from another source. I worked honestly and avoided purposeful inaccuracies when creating the manuscript, producing study data and results, and drawing conclusions from them. Integrity was upheld throughout the entire research process, and academic honesty remained my top priority at every stage. This commitment ensured the credibility and reliability of the research findings.

2.6. *Role of the Researcher*—My role in this study was both observational and inter-

active. Prior to beginning the research, I sought and obtained formal permission from

the Schools Division Superintendent and the respective school heads to ensure ethical compliance and cooperation. During data collection, I actively facilitated semi-structured interviews and focus group discussions, guiding conversations to encourage participants to share their experiences openly and deeply. Throughout this process, I maintained objectivity in analyzing the data, carefully separating my personal biases from the participants' perspectives to ensure accurate and credible results. I followed an interpretive research model that emphasized capturing rich, meaningful data through naturalistic methods such as interviewing and audio recording. Engaging in subjective interaction with participants allowed me to build rapport and foster an environment of trust, which was crucial for eliciting authentic responses. By using this approach, I was able to construct a comprehensive understanding of the teachers' lived experiences, challenges, and insights regarding the use of technology in Home Economics classrooms, while honoring their voices

and realities. Data-collecting procedures such as observation, interviews, questionnaires, and databases are used to gather primary data, while published materials and past literature are considered secondary data (Mazhar, 2021). Primary data collection is essential but time-consuming, allowing researchers to conduct thorough research and address specific research questions (Heap Waters, 2019; Mazhar, 2021). The study utilized in-depth interviews through focus group discussions to obtain authentic and reliable data on teachers' experiences using technological tools to replace lacking classroom equipment. This interview and focus group discussion explore teachers' experiences and challenges in applying technology in classroom instruction as a substitute for lacking classroom materials. The participants are encouraged to articulate their answers most comfortably and in language. The interviews with the teacher would be transcribed verbatim. Lastly, the researcher analyzed the data collected using thematic analysis.

2.7. Data Collection—The process of gathering data for this study followed a systematic and ethical approach to ensure accuracy and respect for participants. To obtain approval for conducting the study, I secured an Ethics Compliance Certificate issued by the Ethics Committee through the Dean of the Graduate School of Rizal Memorial Colleges. This formal endorsement was granted on December 12, 2024, during the second week of December. With this certification, I was officially authorized to begin the research process within the institution, ensuring that all ethical standards and institutional requirements were met prior to data collection.

I sought formal permission from the Schools Division Superintendent (SDS) to conduct the study within the identified schools. To initiate this, I wrote a detailed letter addressed to the SDS, attaching the first two chapters of

the research and the research instrument. This letter clearly explained the study's objectives and identified the prospective participants. I awaited formal approval from the SDS before proceeding further. Upon receiving approval from the SDS, I then requested permission from the school principals. Letters were sent to the school heads explaining the purpose and scope of the study and seeking their consent to conduct the research within their institutions. Next, I approached the selected participants to obtain their informed consent. Each participant was formally oriented regarding the study's objectives, procedures, and their roles within the research. Emphasis was placed on the voluntary nature of their participation and their rights as respondents. Once consent was secured, I conducted focus group discussions guided by a semi-structured interview protocol. Partici-

pants' demographic information was collected prior to the interview. With their permission, I recorded the discussions using a cellular device to ensure accuracy in transcription. I also took field notes to capture immediate observations and non-verbal cues. Throughout the sessions, I engaged actively by listening attentively and responding thoughtfully to participants' in-

puts. Following the interviews, I transcribed all recordings verbatim. Responses in other languages were translated to preserve meaning and context. The data were systematically coded and organized. Thematic analysis identified patterns, similarities, and contrasts, helping extract core themes on teachers' experiences with leveraging technology amid resource constraints.

2.8. Data Analysis—The collected data were analyzed using thematic analysis, a flexible yet rigorous method ideal for uncovering patterns and themes within rich textual data (Majumdar, 2019). This approach enabled a systematic examination of teachers' responses and meaningful insights related to the research questions. As Fuchs (2023) noted, thematic analysis balances transparency, rigor, and flexibility, making it suitable for qualitative educational research. To maintain coherence and rigor, I applied a framework analysis approach, allowing concurrent data collection and analysis. Data from Home Economics teachers were reviewed and organized around recurring themes on technology's role in addressing classroom resource shortages. This approach followed the structured steps of Naeem et al. (2023), ensuring thoroughness in the analytic process.

Familiarizing

At this initial stage, I immersed myself in the data by reading and re-reading the transcripts while noting preliminary observations.

Coding

I assigned concise labels to significant data segments related to the research questions. Coding served as both a data reduction technique and an interpretive process, capturing the semantic and conceptual elements of participants'

responses.

Searching for Themes

I grouped the codes to identify coherent and meaningful patterns relevant to the study's focus. This involved categorizing data extracts under potential thematic areas. Through this process, deeper insights emerged, helping to shape the direction of the analysis. These themes served as the foundation for interpreting the participants' shared experiences.

Reviewing Themes

I critically examined the themes to ensure they accurately represented the data and told a compelling story. This stage included refining theme boundaries and clarifying their interrelationships.

Defining and Naming Themes.

I developed detailed descriptions of each theme, articulating their essence, and assigned clear, concise, and informative names.

Producing the Report

Finally, I synthesized the analytic narrative with supporting data extracts to construct a coherent, persuasive account that addressed the research questions and illuminated teachers' experiences. The framework in Figure 2 offers a systematic approach to analyzing qualitative data, ensuring that the results are extracted in an organized manner and interpreted in a meaningful way.

2.9. Framework of Analysis—To establish the study's credibility, transferability, and de-

pendability, I used qualitative analysis. I gathered data through semi-structured focus group

discussions, where participants' experiences were audio-recorded. Each focus group interview lasted approximately three hours, allow-

ing ample time for participants to share their insights and reflections in depth.

2.10. Trustworthiness of the Study—Trustworthiness or rigor of a study refers to the degree of confidence in data, interpretation, and methods used to ensure the quality of a survey (Stahl and King, 2020). Trustworthiness consists of the components such as credibility, transferability, dependability, and conformability. Researchers should establish the protocols and procedures necessary for a study to be considered worthy of consideration by readers (Amankwaa, Greatman, and Susomrith, 2019). Qualitative researchers must articulate evidence of four primary criteria to ensure the trustworthiness of the study's findings: credibility, transferability, dependability, and confirmability.

Credibility

In this study, the researcher's extent to which a research account is believable and applicable, particularly regarding the level of agree-

ment between the participant and the researcher.

Transferability

Means that ideas or findings from qualitative research can be applied in other circumstances or settings with other participants. A potential user of qualitative research decides whether to transfer findings through elaboration. Dependability

The researcher in this study ensures consistency in the findings despite repetition. In other words, if a person wanted to replicate the study, they should have enough information from your research report to do so and obtain similar findings to your study.

Conformability

Refers to the objectivity of research during data collection and analysis. Two or more independent persons must agree on the data's accuracy, relevance, or meaning. Conformability also indicates a means to demonstrate quality.

3. Results and Discussion

This chapter presents and discusses the key findings of the study. This research examined how Home Economics instructors managed while dealing with inadequate teaching supplies and their firsthand encounters and obstacles. This chapter serves as a presentation of vital study results. This research generated themes through thematic analysis of participant interview data, which received interpretations from existing research frameworks.

3.1. Experiences of Teachers Handling Resource-Limited Learning Environments—The Focus Group Discussion (FGD) reveals that despite being significantly hindered by the lack of physical resources such as sewing machines, kitchen equipment, and other instructional materials Home Economics teachers consistently find ways to deliver meaningful and effective instruction. These educators demonstrate remarkable adaptability by incorporating digital technologies into their teaching practices, such

as utilizing instructional videos, online simulations, multimedia presentations, and interactive platforms like Kahoot and Quizizz. In the face of scarcity, they also exercise a high level of creativity, modifying lesson plans and designing innovative approaches to help students grasp practical concepts through virtual means. This ability to adapt not only reflects their strong commitment to student learning outcomes but also underscores the resilience and ingenuity required to teach Home Economics in resource-limited

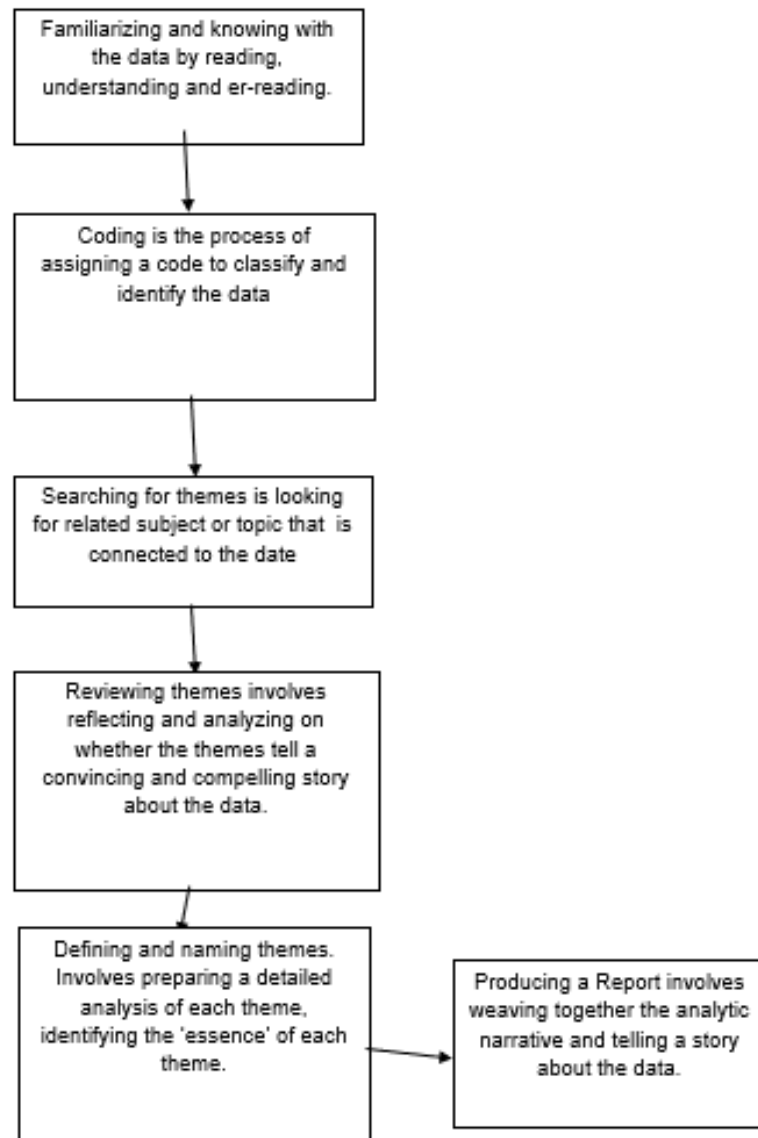


Fig. 2. Analytical Framework of the Study

settings. Their efforts highlight a broader narrative of determination and pedagogical innovation, as they strive to maintain the quality of education despite systemic constraints. The results from the conducted Focus Group Discussion (FGD) revealed three major themes that emerged from the teachers' experiences in using technology and the alternative strategies they employ to address resource scarcity in Home Economics education. These themes are: (1) Struggling with Resource Scarcity, (2) Being Creative in Class Instruction, and (3) Compensating for Scarcity of Materials through Technology. The participants consistently shared these experiences as defining aspects of their instructional practices, highlighting how they adapt and innovate despite limited resources. Their responses emphasized the impact of these

experiences on both teaching and student learning, especially in resource-limited settings. To further illustrate these findings, Figure 3 below presents the thematic structure and specific experiences under each major theme identified in the FGD. The teaching of Home Economics involved managing the classroom environment. The challenge of managing classrooms with scarce educational resources stands as one of these teaching experiences. The three main themes from these experiences include Struggling for resource scarcity and Being Creative in classroom instructions and Technology as a compensation for the scarcity of materials. Teaching professionals encounter these fundamental experiences as they work in their profession.

3.1.1. Struggling from Resource Scarcity— The first major theme that emerged is “Struggling from Resource Scarcity.” Teachers shared that they often face difficulties due to the unavailability of essential materials like sewing machines, ovens, and other equipment necessary for teaching practical skills. Most classrooms lack the physical resources needed to deliver the full scope of the Home Economics curriculum. Teacher 1 emphasizes their struggle with resource scarcity, noting the lack of essential tools like ovens, sewing machines, and kitchenware. Teacher 2 and Teacher 3 echo this concern, highlighting inadequate facilities, especially in Junior High School. Teacher 5 mentions the shortage of hands-on materials, while Teacher 6 adds that this limits student activities and affects their interest. These responses reflect the widespread impact of limited resources on teaching and learning in Home Economics. The integration of Technology in Home Economics education presents both opportunities and challenges. While teachers generally recognize the importance of integrating technol-

ogy into their teaching practices specifically in a home economic field, they often experience barriers such as inadequate technology or ICT facilities and insufficient technical knowledge (Murithi Yoo, 2021). , challenges persist, particularly in remote areas and schools with limited resources. Many teachers need help to use hardware and software in teaching-learning due to a need for more resources and technical knowledge. The perceived ease of use significantly influences teachers' technology integration practices (Nueva, 2019), while technological proficiency correlates with a positive attitude toward online education (Legarde Sumandal, 2022). To address these challenges, schools should allocate resources for purchasing mobile devices and provide extensive training to improve teachers' technological competencies (Aminu Samah, 2019). Educational institutions should ensure necessary facilitation, such as ICT infrastructure, tools, software, and internet access (Akram et al., 2022). Despite these obstacles, teachers maintain a positive perception of technology usage to enhance curriculum

quality and productivity. Research indicates that teachers are increasingly utilizing gadgets in ed-

ucational settings, albeit with varying degrees of success and challenges.

3.1.2. Being Creative in Class Instruction—Despite the lack of materials, the theme “Being Creative in Class Instructions” emerged as a testament to the resourcefulness of Home Economics teachers. Instead of being discouraged, many educators found ways to modify their teaching strategies to adapt to their realities. Teachers shared how they utilized multimedia platforms such as YouTube, online simulations, infographics, and gamified quizzes to help students visualize lessons and stay engaged. These tools served as alternatives to actual tools, allowing learners to understand processes and procedures in food preparation, tailoring, and household management. To cope with the lack of resources, teachers have adopted creative strategies and maximized the use of technology in their instruction. Teacher 1 emphasizes the need to be creative to ensure students still acquire practical skills through demonstrations, simulations, and theoretical discussions. Teacher 3 supports this by integrating multimedia tools and online directives to help students visualize work processes. Similarly, Teacher 5 uses PowerPoint presentations, educational games, and YouTube videos to enhance interactive learning. Teacher 9 shares that working in Home Economics has taught them to be flexible and innovative in using technology as a substitute for missing equipment. Likewise, Teacher 8 highlights the importance of creativity and tech integration when tools for

hands-on activities are unavailable. Collectively, their responses show how resourceful teaching practices help bridge the gap caused by material scarcity. Home Economics teachers play a crucial role in fostering creativity and innovation in the classroom, despite resource limitations. They are expected to act as facilitators, encourage collaboration, and utilize new technologies and teaching strategies to engage students (Uwameiye, 2019). However, teachers face challenges in improvising instructional materials, such as aligning with curriculum guidelines, catering to individual needs in overcrowded classrooms, and staying informed about innovative developments (Chukwuone et al., 2020). To enhance creativity among students, teachers should adopt innovative and pragmatic delivery methods, while also focusing on their own professional development and Internet literacy. Strategies for improvement include self and group professional development, training, and strengthening collaborations between learning institutions and industry. Additionally, government support in providing adequate funds, facilities, and equipment is crucial for effective teaching and learning of Home Economics. This support ensures that both the teachers and students have access to the necessary tools and resources for meaningful learning. With sustained investment, schools can better integrate technology and hands-on activities that enrich Home Economics instruction.

3.1.3. Compensating for Scarcity of Materials through Technology—One of the most prominent themes that emerged from the responses of Home Economics teachers is the adaptive use of technology as a compensatory tool in response to the lack of instructional materials. Teachers noted that due to the absence of physical resources such as ovens, sewing ma-

chines, kitchen tools, and textile materials, they turned to digital tools to bridge the gap. Technology, in this context, serves not as a replacement for practical activities but as an alternative instructional aide to simulate real-life applications. Teachers frequently utilize YouTube tutorials, step-by-step infographics, PowerPoint demonstrations, and virtual simulations to visually rep-

resent the processes involved in culinary tasks, sewing techniques, and household management. These digital resources help students gain a conceptual understanding of the skills and procedures even if they are not immediately able to perform them hands-on. This response illustrates how technology becomes a powerful pedagogical tool in resource-limited environments, enhancing learners' theoretical knowledge despite physical constraints. Moreover, many participants pointed out that interactive digital platforms such as Kahoot, Quizizz, and Google Classroom allow them to creatively reinforce learning while maintaining student engagement. These platforms not only facilitate assessment and feedback but also make learning enjoyable and accessible. Faced with limited equipment and materials in laboratory settings, teachers turn to technology to enhance instruction and ensure learning continues effectively. Teacher 1 shares compensating through multimedia presentations, instructional videos, virtual simulations, and improvised materials. Teacher 2 emphasizes that technology serves as an alternative to help students understand processes, frequently using videos, simulations, and digital presentations. Teacher 3 supports this with the integration of ICT through PowerPoint, videos, and virtual simulations. Teacher 7 details a more advanced approach, using DLP projectors and laptops due to limited lab space, creating instructional videos, downloading online content, and incorporating interactive quizzes via Kahoot, Quizalize, and Yudu Copilot, alongside fast paper checking with ZipGrade and item analysis. Collectively, these strategies showcase how digital tools are maximized to overcome material shortages and maintain instructional quality. Studies indicate that technology is frequently used for essential substitution rather than meaningful learning experiences (Siefert et al., 2019). Teachers generally have positive perceptions towards integrating technology into teaching and learning processes. Teach-

ers believe technology enhances instructional practices, makes learning interactive, and keeps learners motivated (Akram et al., 2022). At some school level, gadgets are used as search engines, learning media, and communication tools (Saefudin Munjiatun, 2022). In the Philippines, studies indicate that Filipino teachers generally have a positive attitude toward technology integration in education particularly in home economics (Nueva, 2019; Legarde Sumandal, 2022). The perceived ease of use significantly influences teachers' technology integration practices (Nueva, 2019), while technological proficiency correlates with a positive attitude toward online education (Legarde Sumandal, 2022). In addition to the national context, a study by Quillo and Rondina (2020) revealed that public school teachers in the Philippines positively perceive using technology to enhance teaching and learning despite lacking technological knowledge in their respective subjects specifically those subjects that need some equipment or tools such as home economic. According to them, teachers are at the forefront of learners' educational experiences and provide them with the guidance and technical skills they need to become productive. The technological revolution has led to an expectation from teachers to incorporate community-based technological resources into their classroom instruction. The educational method now requires teachers to merge technology techniques beyond adding digital devices for lessons because this combination serves both instructional enhancement and student learning effectiveness. The investigation indicates teachers integrate technology through personal adaptations of existing resources that best match the requirements of their students. Educators can establish an interactive learning space through their selection of multiple technological tools including multimedia presentations combined with interactive applications and web-based resources. The innovative method enables learners to explore ma-

materials in diverse stimulating paths thus creating educational experiences that educate as well as entertain them. Education technology serves as a resource-bridging tool in underserved educational zones because it fills the gap of scarce materials. Teaching professionals utilize digital tools to replace insufficient physical resources which deliver educational material at minimum or superior levels to students. Modern education depends on technology as an essential element which allows teaching staff and students to discover innovative ways to expand traditional classroom educational boundaries. Figure 3 illustrates the main themes that emerged from teachers' experiences in managing classrooms with limited resources. One significant theme is "Struggling from Resource Scarcity," which encapsulates the everyday challenges educators face due to the unavailability of basic teaching materials and classroom necessities. Teachers often find themselves improvising or making do with what little is available, which aligns

with the second theme, "being creative in class instruction," leading to increased stress and a heavier workload. The scarcity not only affects the delivery of instruction but also hinders student learning, particularly in practical and hands-on subjects where materials are essential. Another prominent theme is "Compensating for Scarcity of Materials through Technology," highlighting how educators attempt to bridge gaps using digital tools. Even in the face of minimal physical resources, many teachers leverage technology as a compensatory measure, utilizing devices, software, or online resources to deliver lessons and provide interactive content. "Being Creative in Class Instructions" also stands out as a key theme, showcasing how teachers develop innovative approaches and strategies to engage students despite constraints. This creativity becomes a vital skill, allowing educators to adapt and thrive even in under-resourced educational settings.

3.2. Challenges Encountered in the Use of Technology and Alternative Strategies—The results from the conducted Focus Group Discussion (FGD) revealed three major themes that emerged from the teachers' perspectives on the challenges encountered in the use of technology and the alternative strategies they employ to address resource scarcity in Home Economics education. These themes are: (1) Accessibility is a Hindrance, (2) Technical Disruptions, and (3) Technology as a Non-replacement for Practical Experience. The participants consistently highlighted these issues as significant barriers that hinder effective instruction despite their willingness to adapt and innovate. The responses emphasized how these challenges affect both teaching and student learning, espe-

cially in resource-limited settings. To further illustrate these findings, Figure 4 below presents the thematic structure and specific challenges under each major theme identified in the FGD. Teachers encounter challenges in their profession and in their experiences of having scarce materials for their mode of instruction. Despite having alternatives to alleviate the scarcity of materials, teachers also face hindrances such as accessibility, technical disruptions, and most importantly, technology cannot replace the practical experiences of students, being hands-on in their practice. This highlights the need for a balanced approach that integrates technology with real-world practice. Ensuring students receive both theoretical knowledge and hands-on experience is essential for effective learning outcomes.

3.2.1. Accessibility is a Hindrance—

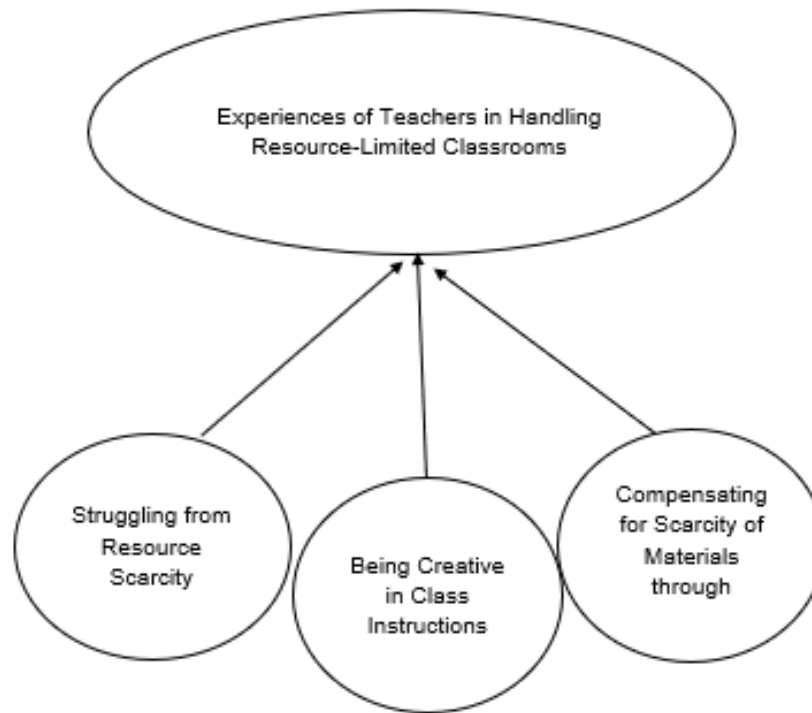


Fig. 3. Emerging Themes on the Experiences of Teachers in Handling Resource-Limited Classrooms

The first challenge relates to “Accessibility is a Hindrance.” While technology is considered a valuable alternative to limited classroom tools, teachers emphasized that its effectiveness is hindered by students’ limited access to devices and internet connectivity. Many students do not own smartphones or have internet subscriptions, especially those coming from low-income households. As a result, not all learners can benefit from the multimedia resources provided by the teachers. Despite the benefits of technology, teachers highlight accessibility as a major challenge in its implementation. Teacher 1 points out that not all students have personal gadgets or reliable internet access, making it difficult for them to use digital learning tools effectively. Teacher 3 adds that unstable internet connections and limited access to devices further hinder digital learning. Similarly, Teacher 10 shares that during class suspensions requiring a shift to online learning, some students are unable to participate due

to the lack of digital devices or connectivity. These challenges reveal how digital inequality can limit the effectiveness of technology as a teaching solution. Adesoji et al., (2020) stressed that some constraints that have been increasing due to resource shortages can be tackled using new possibilities offered by the latest developments in digital technologies. Using different internet resources, acting, and online tools may help learners acquire the knowledge of performing skills needed in today’s work environment. Technology can be a cost-effective substitute for lacking equipment in education, particularly in underdeveloped countries. Virtual reality has been proposed as a solution for insufficient engineering laboratories, offering a less expensive and more dynamic means of practical training. The pandemic accelerated the adoption of technological tools in education, highlighting their potential benefits beyond the crisis period (Oliveira Santos, 2024). However, challenges persist, including inadequate infrastructure and

limited access to devices in public schools. To address these issues, solutions such as providing teacher training, equipping schools with technological resources, and ensuring sufficient budgets for maintenance are necessary (Akbar Noviani, 2019). While technology can enhance student learning in areas like health and motivation, it is often used as a substitute for teachers rather than transforming teaching and learning practices (Sargent Calderón, 2021). Overcoming these challenges is crucial for leveraging technology's potential in education. Teachers face resource limitations, including insufficient materials, equipment, and skills (Pamor et al., 2024). Despite these constraints, some teachers purchase and use their technology to enhance instruction (Intatano, 2019). Teachers employ pedagogical diversity technology integration to address challenges and attend training seminars (Pamor et al., 2024). Integrating Information and Communication Technologies (ICT) is crucial for 21st-century teaching. However, the Philippines is lagging behind other countries like Hong Kong in terms of ICT integration for home economics education (Limon, 2022), highlighting the urgent need for improved ICT

infrastructure. Recommendations for improvement include enhancing communication, collaborating with stakeholders, and focusing on professional development and resource optimization (Pamor et al., 2024). Common obstacles in technology integration include inadequate infrastructure, unreliable internet connectivity, and limited technical support. These challenges have led some teachers to rely on personal devices to enhance instruction and cater to diverse learners. Pre-service teachers recognize the potential of technology to make lessons more engaging and improve learning outcomes, yet they also highlight drawbacks such as the time-consuming nature of lesson preparation. Technological competencies among teachers vary, with many requiring supports to effectively utilize advanced tools. To address these issues, it is recommended to provide professional development focused on technology integration, upgrade school infrastructure, and ensure ongoing technical assistance. Overall, while educators acknowledge the benefits of technology in education, strong systemic support is essential for its successful implementation.

3.2.2. Technical Disruptions—Another major theme, Technical Disruptions, was frequently cited as a barrier to effective instruction. Teachers described frequent power outages, weak mobile signals, and outdated hardware as common occurrences that negatively impact lesson delivery. Even when digital lessons are carefully planned, these disruptions often result in rescheduling or re-teaching, adding stress and inefficiency. Teachers commonly experience technical issues that disrupt the smooth flow of their lessons. Teacher 1 mentions power outages, malfunctioning projectors, and sudden internet loss during class. Teacher 3 also points out how technical difficulties interfere with effective instruction. Teacher 7 highlights

unreliable internet and unexpected power interruptions as major concerns. Similarly, Teacher 4 and Teacher 5 emphasize that brownouts and weak internet access hinder their ability to present videos, slideshows, and other online resources. These recurring technical challenges limit the consistent integration of technology in classroom teaching. Common barriers include poor technical support, inadequate infrastructure, and unreliable internet connectivity (Kgosi et al., 2023). Resource shortages and insufficient technical knowledge among teachers are significant obstacles to ICT implementation. However, when properly implemented, technological tools can positively impact student learning outcomes. In Rwanda, for example, using

projectors in classrooms was widespread and effective (Manikuzwe Faustin, 2024). To address these challenges and harness the benefits of educational technology, recommendations include providing practical in-service training for teachers, improving access to network services, offering technical assistance to schools (Yuomeyse Ngamaleu, 2020), and prioritizing government investments in infrastructure and digital resources (Manikuzwe Faustin, 2024). Technical disruptions pose significant challenges to effective instruction in high school settings. Despite good access to technology, teachers frequently experience disruptions that require problem-solving strategies. These disruptions can impair learning outcomes and increase attrition rates in online training programs. Common barriers include limited availability of technology and lack of adequate access, time,

training, and institutional support. Teachers' personal beliefs about technology and pedagogy also play a role in technology. To address these challenges, schools should provide better technical support and professional development. Additionally, fostering design thinking among teachers may help overcome barriers to technology integration. Despite these challenges, increased student engagement is recognized as a key benefit of technology use in classrooms. By leveraging interactive platforms and collaborative tools, educators turn challenges into deeper learning opportunities. Targeted training in design thinking empowers teachers to create engaging, resilient learning. Integrating robust support systems and innovative strategies sustains engagement and improves instructional quality.

3.2.3. Technology as a Non-Replacement for Practical Experience—The third theme, “Technology as a Non-replacement for Practical Experience,” emphasizes the limitations of digital learning tools in subjects that require physical demonstration and skill application. Although simulations and tutorial videos can present information visually, they cannot provide students with the tactile feedback, muscle memory, and problem-solving experience that come with actual practice. Teachers observed that while students may understand the steps conceptually, they often struggle to execute them in real life. While teachers acknowledge that technology provides a helpful alternative, they emphasize it cannot fully replace real-life, hands-on experience. Teacher 1 points out that videos may show how to cook, but without doing it, students miss essential sensory and practical skills. Teachers 2 and 3 stress the gap between theory and practice, noting that students struggle to apply what they’ve only seen. Teachers 4 to 6 agree that while tech

can support instruction, it falls short in replicating real-world environments and developing practical skills critical in Home Economics. Research suggests that while technology can enhance educational experiences, it cannot fully replace practical, hands-on learning in fields like engineering and teacher training. Traditional laboratories and field experiences provide unique opportunities for developing a physical understanding of abstract concepts and interacting with real-world environments (Asare, et al., 2023). Technology-enhanced field experiences can offer benefits such as exposure to diverse teaching environments and promoting reflectivity, but they have limitations including lack of interaction and reduced complexity (Suphasri Chinokul, 2021). In petroleum engineering education, a combination of practical experiences, including undergraduate research programs, field trips, and virtual reality simulations, has been shown to significantly enhance students’ skills and understanding of concepts (Retnanto et al., 2020). While technology can

complement and support learning, it is crucial to consider specific educational objectives when determining the appropriate balance between technological approaches and hands-on experiences. Technology contributes heavily to educational processes, but cannot replace teachers' emotional responses and decision-making. The recommended approach combines practical experience with supporting theoretical knowledge. Institutions should organize workshops, work placements, and lab environments to provide initial hands-on opportunities linking theory and practice. Technology should enhance practical experiences and human interaction, not replace them. Technology should enhance practical experiences and human interaction, not replace them in any educational setting. Figure 4 presents themes related to the difficulties teachers face when integrating technology and alternative strategies in resource-limited environments. One major challenge is "Accessibility is a Hindrance," which reflects the limited or inconsistent access to devices, internet connectivity, or tech-based tools among both teachers and students. This lack of access creates a digital divide, making it difficult to rely solely on technological solutions for instruction. In some cases, students are unable to participate in lessons

or complete assignments, which widens educational disparities. The themes "Technology as a Non-replacement for Practical Experience" and "Technical Disruptions" further illustrate the limitations of tech integration. While digital tools can support learning, they are not always effective substitutes for hands-on practice, especially in skill-based subjects like Home Economics. Teachers note that students miss out on the tactile and experiential components necessary for true understanding. Moreover, "Technical Disruptions," such as power outages or software malfunctions, often interrupt the teaching flow, causing frustration and lost instructional time. These themes underscore the complex balance educators must strike between innovation and practical challenges. These obstacles highlight the importance of blending traditional, hands-on methods with digital tools to ensure learning continuity. By anticipating potential disruptions and creating flexible lesson plans that integrate low-tech alternatives, teachers can mitigate the impact of connectivity issues and preserve the quality of experiential learning. Ultimately, addressing these challenges requires systemic support, including infrastructure improvement and professional development tailored to resource-constrained settings.

3.3. Coping Strategies and Insights from Teachers of Home Economics —The findings from the conducted Focus Group Discussion (FGD) revealed three central themes that encapsulate the teachers' perspectives on leveraging technology to address resource scarcity in Home Economics education. These themes are: (1) Being Resourceful and Making use of what is Available, (2) Adapting to the Situation, and (3) Teaching with Technology Influencing Student Behavior. The participants consistently emphasized these themes as reflections of their innovative approaches, resilient mindsets, and the practical adjustments they make in response to the lack of resources. Despite the constraints,

the teachers demonstrated a strong commitment to ensuring meaningful learning experiences through creative and adaptive teaching strategies. To further illustrate these findings, Figure 5 below presents the thematic structure and corresponding insights under each major theme identified during the FGD. As teachers face the struggles of teaching with resource scarcity and difficulties in technological classroom instructions, they have coping strategies and insights that help them navigate through these adversities. The following has emerged from their responses: Be resourceful and make use of what is available, Adapt to the Situation, and Teaching with technology affects student behavior.

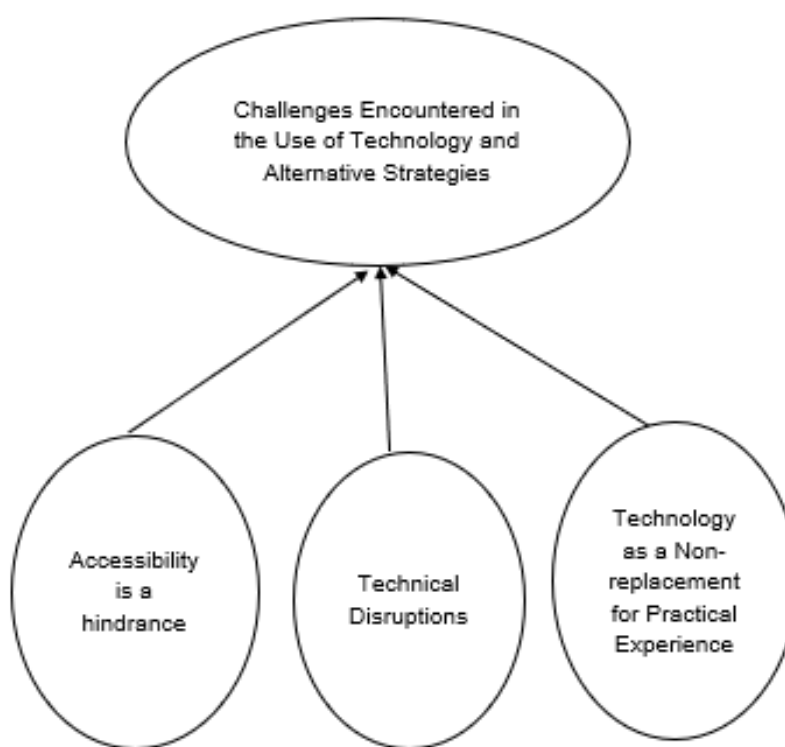


Fig. 4. Emerging Themes on Challenges Encountered in the Use of Technology and Alternative Strategies

3.3.1. Being Resourceful and Making use of what is Available—To mitigate the challenges they face, teachers demonstrated the ability to develop coping mechanisms such as the theme “Be Resourceful and Make Use of What Is Available.” Many educators shared that they encourage students to use household items as substitutes for school-provided materials. For example, instead of commercial sewing kits, students are guided to use basic sewing tools available at home; instead of using ovens, students are taught no-bake recipes. To cope with limited resources, teachers creatively adapt their methods to ensure students still gain meaningful learning experiences. Teacher 1 maximizes available tools and promotes collaborative learning through discussions and analysis of videos and simulations. Teacher 2 introduces basic skills using improvised models, encourages home-based tasks like cooking with photo or video submissions, and strives to provide hands-on practice whenever possible. Teachers 3 and 4 engage students with interactive strategies such as debates, group work, performance tasks,

and low-cost alternatives, ensuring active participation and better retention even when real equipment or technology is unavailable. There are studies that examine teachers’ challenges and coping mechanisms in various educational contexts. Common challenges include limited resources, time constraints, and difficulties in instructional delivery (Magdaraog Benavides, 2020). Teachers cope by being resourceful, collaborating with colleagues, and managing time effectively. The pandemic has exacerbated these challenges, necessitating adaptations to distance learning modalities (Agayon et al., 2022). Teachers have responded by gathering resources, profiling learners, and engaging in capacity building. Despite facing obstacles such as digital divide and assessment complexities, educators demonstrate resilience through positive well-being, openness to change, and peer mentoring (De Villa Manalo, 2020). The studies emphasize the importance of support from school administrators and professional development programs to address teachers’ needs and improve their teaching methodologies.

3.3.2. Adapting to the Situation—The second strategy is encapsulated in the theme “Adapting to the Situation.” Teachers prepare multiple versions of lessons—both online and offline—to ensure continuity of learning. Backup resources such as printed worksheets, offline video tutorials, and step-by-step visual guides are created to accommodate students who face technological barriers. This dual-mode instruction reflects the growing importance of blended learning approaches and highlights the teachers’ proactive stance in addressing educational gaps. It also points to a need for system-level support, such as the development of modular and hybrid content in technical-vocational education. Teachers demonstrate resilience and adaptability in addressing technological limitations by prepar-

ing backup plans and diversifying their teaching strategies. Teacher 1 ensures continuous learning by providing printed guides or offline videos during internet disruptions. Teacher 2 maintains student engagement with video note-taking, peer discussions, and home-based practice using available household materials. Teacher 4 emphasizes collaborative activities to ensure learning continues even during interruptions. Teacher 5 pre-downloads videos, prepares alternative plans, and encourages students to bring materials for hands-on learning to build practical skills. Meanwhile, Teacher 10 highlights flexibility as essential, constantly seeking new methods and digital tools to keep learning effective, safe, and productive despite ongoing challenges. Studies reveal that teachers view the digital divide as both a challenge and

an opportunity, employing adaptive pedagogical strategies to address diverse learner needs. Teachers have shown higher technology adaptation levels compared to students, with age being a significant factor in adaptation (Sacramento et al., 2021). To meet the demands of flexible learning modes, teachers explore creative ways of delivering core practices, relying on institutional training, resources, and personal learning initiatives (Bongco De Guzman, 2022). Initially, teachers experienced a "culture shock" and were reluctant to implement blended learning due to lack of preparedness and technological skills. However, they eventually adopted a positive mindset, improved their technical skills, and fostered new collaborative relationships (Enarsao, 2023). Continuous teacher training and access to suitable devices are crucial for effective blended learning implementation. Dur-

ing pandemic necessitated a rapid shift to online and blended learning models in education systems worldwide. Teachers had to adapt quickly, preparing multiple versions of lessons for both online and offline delivery to ensure learning continuity. This transition required educators to develop new skills in virtual didactics and ICT-based pedagogics. However, challenges emerged, including limited internet connectivity for students and a lack of necessary skills and equipment among teachers, particularly in developing nations. The adaptation process varied among teachers, with age being a significant factor in technology adoption. Despite these challenges, the pandemic has accelerated the integration of technology in education, prompting a shift in the role of teachers from knowledge educators to learning motivators and progress managers.

3.3.3. Teaching with Technology Influencing Student Behavior—The integration of technology in Home Economics teaching has shown a noticeable influence on student behavior, both positively and negatively. Teachers observed that when technology is used effectively—such as in showing video demonstrations, interactive slides, or online games—it increases students' engagement and attentiveness during lessons. Visual presentations and interactive platforms capture learners' interest, especially those who struggle to understand concepts through text-heavy materials. This indicates that the sensory appeal and accessibility of digital tools foster active participation and contribute to better classroom focus. It also shows that students are more likely to retain information when it is delivered in a dynamic, multimedia format, consistent with findings in educational psychology that support visual and auditory learning channels. Teachers emphasize that they are truly struggling with resource scarcity, which affects student engagement and understanding.

Teacher 2 notes that while some students enjoy learning through visuals, others feel disconnected without hands-on materials. Teacher 4 explains that though technology helps students focus and grasp concepts quickly, the absence of real equipment limits their confidence and ability to perform practical tasks. Teacher 5 observes that students are more excited during tech-based lessons but become less confident when applying skills in real-world settings. Similarly, Teacher 6 finds that although videos spark interest and clarify misconceptions, students still struggle to fully understand concepts without access to physical tools. The integration of technology in teaching has significant effects on student behavior and achievement. It can enhance engagement, facilitate adaptive instruction, and create a respectful learning environment when implemented thoughtfully (Han et al., 2019). Technology integration allows teachers to better control the classroom, reduce discipline issues, and boost their confidence by speaking students' technological language (Ah-

mad Hamad, 2020). However, the use of mobile devices in classrooms can be disruptive, with students using them for non-educational purposes like social media. Over time, technology has reshaped learning environments and student habits, leading to a decline in face-to-face communication and reading habits while increasing mobile phone usage (Kriyantono et al., 2024). To maximize the benefits of technology in education, teachers need to adopt new teaching methodologies that balance technological integration with educational objectives. The above citations indicate that technology integration in education modifies student conduct and academic results by improving both student engagement and adaptive teaching methods and building respectful classrooms. Teachers effectively run their classrooms and establish relationships with students through digital tools they already use. Inappropriate device utilization fails to concentrate students due to various distractions. Technology has transformed educational practices through the years, which has resulted in less direct communication and conventional reading but has produced a greater dependence on mobile devices. Educators will achieve maximum results when they implement balanced teaching methods that integrate technology use according to educational intentions.

Figure 5 focuses on how Home Economics teachers adapt and respond to the limitations they face in their classrooms. A central theme is “Being Resourceful and Make Use of What is Available,” reflecting the proactive mindset educators adopt to overcome scarcity. Teachers creatively repurpose everyday items, use household alternatives, and develop low-cost instructional materials to simulate learning experiences. This resourcefulness enables them to continue delivering lessons effectively even when traditional tools are lacking, and it sets a powerful example for students. Additional insights include the themes “Teaching with Technology Influencing Student Behavior” and “Adapting to the Situation.” Teachers observed that using technology not only changes the way they teach but also influences how students engage with content, sometimes increasing motivation, but also occasionally leading to distractions. The theme “Adapting to the Situation” embodies the resilience of teachers who constantly adjust their methods and expectations to meet the evolving realities of their classrooms. Together, these themes highlight the flexibility and dedication of educators working under challenging conditions, and their commitment to student success despite ongoing limitations.

4. Implications and Future Direction

This study examined the academic experiences of Home Economics teachers in integrating technology to enhance instructional practices. The findings underscore the critical role of technology in mitigating resource constraints, improving the effectiveness of lesson delivery, and fostering enriched learning environments for students. These results have significant implications for educational policy, instructional management, and the advancement of pedagogical strategies within resource-limited contexts.

4.1. Findings—The integration of technology in Home Economics education can be explained by three complementary theories. The Technological Pedagogical Content Knowledge (TPACK) framework describes how teachers

blend their understanding of content, pedagogy, and technology to deliver effective instruction. The Transactional Theory of Stress and Coping sheds light on how teachers handle the challenges and pressures that arise from limited

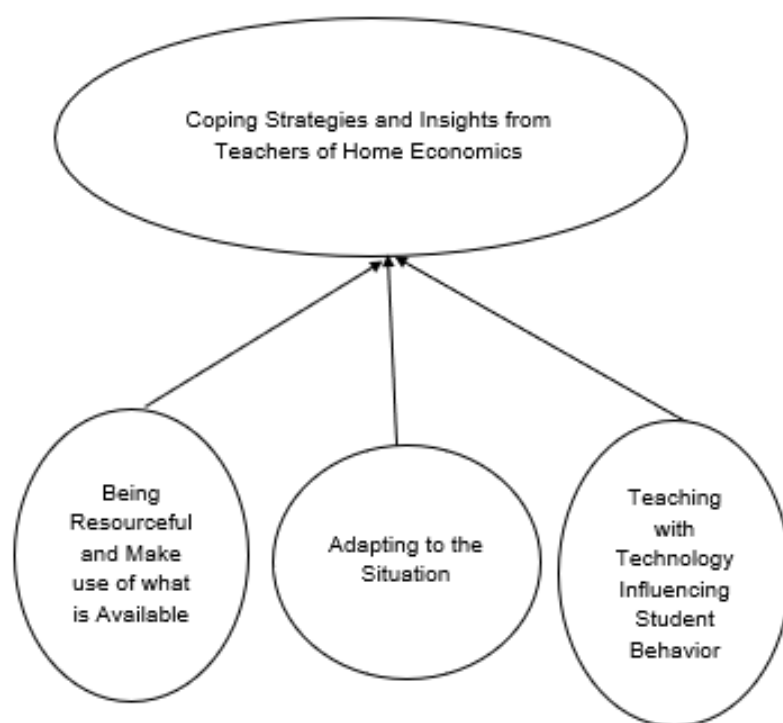


Fig. 5. Emerging Themes on Coping Strategies and Insights from Teachers of Home Economics

resources and adapting to new technologies. Meanwhile, the Diffusion of Innovation Theory explains how teachers adopt and spread technological innovations within their schools over

time. Together, these theories provide a comprehensive view of teachers' experiences, coping strategies, and adoption processes related to technology use in education.

4.2. Implications—The integration of technology within Home Economics education has significantly transformed traditional pedagogical approaches, enabling more adaptive, engaging, and efficient instructional methods. Educators have leveraged multimedia resources, virtual demonstrations, and online learning platforms to mitigate the challenges posed by limited physical tools and materials. This technological incorporation not only optimizes instructional delivery but also promotes greater student engagement and autonomy in mastering practical subjects. However, the study identified disparities in access, digital literacy, and training among educators. While some teachers demonstrate innovative and effective integration of technology, others require comprehensive professional development and institutional support to enhance their digital competencies. This discrepancy underscores the urgent need for systemic interventions to provide equitable access to technological resources and capacity-building opportunities for all educators. Furthermore, the findings emphasize the significance of contextualized learning in Home Economics. By utilizing technology, teachers tailor instructional content to reflect local cultural practices and resource availability, thereby enhancing the relevance and applicability of lessons to students' everyday experiences. This contextualization not only deepens student engagement but also facilitates the acquisition of essential life skills beyond the classroom setting. The study also revealed that educators in resource-

constrained environments exhibit remarkable adaptability and creativity in overcoming infrastructural limitations. The scarcity of essential teaching aids—such as ovens, sewing machines, and kitchenware—necessitates alternative instructional strategies, including the use of multimedia tools, virtual simulations, and digital presentations. While these methods effectively support conceptual understanding, they cannot fully replace hands-on experiential learning, which remains critical for skill acquisition in technical disciplines. Significant challenges persist in the deployment of technology, primarily due to limited student access to devices and reliable internet connectivity. Interruptions caused by power outages and connectivity failures further compromise the continuity of learning. More importantly, the inability of technology to replicate the tactile and procedural nuances of hands-on practice presents a substantial barrier to achieving practical competency. Students may cognitively grasp theoretical principles via digital media but often struggle to translate this knowledge into real-world applications. To address these issues, teachers employ adaptive strategies that highlight flexibility and resourcefulness, such as using alternative materials, fostering collaboration, assigning home-based tasks, and preparing offline contingency plans. These approaches stress the balance between technology and hands-on experience. The findings call for strong institutional support in physical resources and digital infrastructure to foster both theory and practical learning.

4.3. Future Directions—Building upon the findings of this study, several future directions

are proposed to foster sustainable advancements in Home Economics education through the

strategic integration of technology.

For Teachers

Schools and educational authorities must implement continuous professional development programs specifically designed to enhance teachers' capacity to integrate technology effectively into Home Economics instruction. These training initiatives should emphasize practical, hands-on workshops covering the use of video-based demonstrations, virtual simulations, and the digitization of lesson plans, enabling educators to employ diverse and innovative pedagogical tools.

Learners

This study highlights how technology can improve learners' learning experiences in Home Economics, even with limited resources. Digital tools and online platforms allow learners to engage more deeply with practical tasks like cooking, sewing, and budgeting, fostering confidence and competence despite material constraints. Using technology could result in a more personalized and interactive learning process, enabling learners to practice skills at their own pace and explore various areas of interest, ultimately creating a more supportive and empowering learning atmosphere.

For School Administrators

To address the persistent disparities in technological resources, concerted efforts must be directed towards equalizing access to Information and Communication Technology (ICT) infrastructure across schools. Provisioning Home Economics classrooms with smart TVs, tablets, projectors, and reliable internet connectivity

can significantly enrich the delivery of practical lessons, fostering an interactive and modern learning environment.

For Policy Makers

Collaboration between teachers, instructional designers, and policymakers is essential in developing culturally responsive digital learning materials. These resources should incorporate indigenous knowledge systems, sustainable practices, and locally accessible materials, ensuring that technology integration remains contextually relevant and meaningful to learners' lived experiences rather than solely reflecting globalized educational trends.

For the Community

Engagement with local stakeholders—including businesses, technical institutions, and community organizations—can serve as a critical support mechanism for technological enhancements in Home Economics education. Partnerships may facilitate resource donations, capacity-building workshops, and the co-creation of digital educational materials, thereby strengthening the communal investment in educational innovation.

For Future Researchers

Future inquiries should explore students' perspectives and outcomes in integrating Technology into Home Economics programs. Investigations into students' digital adaptability, skill acquisition and overall engagement will provide a comprehensive understanding of the pedagogical impact of technology, informing more nuanced and effective instructional practices.

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