

Research Article

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Multimedia-Based Instruction in Bachelor of Technology and Livelihood Education (BTLED) Home Economics

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Abstract

This research determined what multimedia the home economics professors prefer in teaching the competencies needed in the BTLEd home economics program. Also, it shows what competencies students need in the identified areas of home economics and the challenges students encounter in using various multimedia for instruction. Data was retrieved from (N=42) BTLEd Home Economics students' day and evening sessions and the (N=7) professors teaching home economics subjects. The study made use of mixedmethod research. For the quantitative part, students and professors completed a questionnaire using Google Forms. Where Students Needed Competencies in the Identified Major Areas in Home Economics was presented, followed by the Preferred Multimedia-Based Instruction Used by the Home Economics Professor. A qualitative research design was used to determine the challenges encountered by the students in using multimedia in the identified major areas in Home Economics. Thematic analysis using Braun and Clarke's (2006) model was applied to analyze the qualitative data on the challenges encountered using multimedia in Home Economics. Findings revealed four major themes of student challenges encountered in multimedia: no internet access, lack of computers and gadgets, lack of familiarity with multimedia, and computer Illiterate. To ensure that every student has fair access to digital resources and the necessary skills to use them, the school has to develop a comprehensive Digital Inclusion Program. The school will be able to handle internet access, device shortages, and digital literacy in a thorough and organized way by putting this approach into place. Providing students with the necessary skills and resources for multimedia-based learning would also promote an inclusive and fair digital learning environment.

Keywords: technology, home economics, competencies, multimedia, skills

1. Introduction

Changes in Technology and Livelihood Education occur now and then, specifically in Home Economics. Nowadays, technology is a necessary part of everyday existence. It is essential to regularly use ICT (information and communication technology) to aid teaching. As cited by (Phua, Wong, and Abu,2011), technology can change how teachers instruct the students in the classroom (Afshari et al., 2008). Teachers are expected and encouraged to use the Internet to teach all subjects.

(Lokken, Cheek, & Hastings, 2003). With the advent of the internet, the amount of data has doubled; students can find much information and interact with as many people as possible. Students can store a large amount of data, TPAC tutorials, videos, and lectures on their computers and access them anytime and anywhere. Many Home Economics teachers know that ICT makes information easily accessible. Learning becomes interesting and exciting. Despite lecturers' understanding of the benefits of ICT in teaching Home Economics, many tertiary institutions still need to use ICT gadgets in teaching (Achebe, 2012), as noted by (Ma, A. & Pendergast, D.,2010). ICT is a new trend and change that home economics teachers should be well-informed about to assist students in accomplishing the subject's primary goal. (Ejinkeonye et al., 2016).

To create meaningful learning experiences and foster good viewpoints and interactions with technology, teachers can also use the TPACK (Technological Pedagogical Content Knowledge) paradigm, which advocates integrating technology into traditional classroom environments. (Adams, 2019.) To effectively integrate technology, pedagogy, and content knowledge into multimedia-based instruction for BTLEd Home Economics, instructors might consider the TPACK framework. This would Improve student engagement and academic performance in home economics classes resulting from this integration, which ensures that technology is used to improve teaching and learning events. The most intriguing component of this approach is technological knowledge (T.K.), which is challenging to quantify due to the rapid advancement of new developing technologies. Teachers must be thoroughly aware of current and emerging technologies and how to incorporate them effectively into the curriculum. The term "Pedagogical Knowledge" (P.K.) describes how a teacher effectively conveys content to their students and responds to any difficulties or misunderstandings on the part of the student. Content knowledge(C.K.) properly understands a particular field or subject matter. (Misha & Koehler, 2006). Teachers must analyze and evaluate technology-based resources before integrating them into their classrooms to ensure that technology optimizes learning rather than just serving as empty expectations.

Technology can impact Instruction in several ways, such as using a four-tiered framework known as the SAMR (Substitution, Augmentation, Modification, and Redefinition) model. Teachers can use the SAMR framework to help them move from substitution to redefinition when adopting multimedia-based instruction for BTLEd Home Economics. With the help of this framework, educators are prompted to consider critically how technology might improve teaching and learning processes and provide students with more relevant, engaging, and real-world learning possibilities. Technology may inspire students in various ways when using the SAMR model. A teacher could choose to forgo one technology in favor of another when focusing on specific motivational and learning objectives. (Hamilton, Rosenberg, & Akcaoglu, 2016). A multi-tiered SAMR model demonstrates how technology is used in classrooms. For choosing, utilizing, and assessing technology in K-12 contexts, the SAMR model is a four-level, taxonomy-based approach. (Puentedura, 2014). Six teachers can discriminate between employing lower-level and higher-level technology using this technique. Puentedura, the paradigm's developer, thinks that as teachers advance along the model, teaching and learning reach higher and more advanced levels. (Hamilton et al., 2016). With a minor adjustment of Instruction employing technology, this movement along the Substitution, Augmentation, Modification, and Redefinition (SAMR) model may occur in any topic. For instance, students studying forces in motion may construct a machine employing a Sphero. A robot controlled by a device. This robot might provide actual push and pull examples. Afterward, students can utilize various educational technology to demonstrate their learning (Bernstein D, Crowley K, 2008). The SAMR model offers a way to assess each assignment to ascertain the depth and complexity of technology integration because this is only one of many opportunities for students to use technology (Kirkland, 2014).

The views of SAMR and TPACK will assist all faculty in making teaching more accessible and enjoyable using Technology. Regarding technology integration in multimedia-based instruction for BTLEd home economics, SAMR, and TPACK provide complementary viewpoints. While TPACK concentrates on integrating technology, pedagogy, and content knowledge, SAMR offers a framework

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for assessing the degree of technology use and transformation. Together, they empower teachers to evaluate, improve, and critically assess their methods of instruction, guaranteeing that multimediabased learning is relevant, engaging, and consistent with the objectives of home economics education. Teachers can work toward efficient technology integration that maximizes student engagement, learning outcomes, and the general caliber of home economics instruction by considering both SAMR and TPACK. Multimedia is widely regarded as one of several countries' most valuable educational contributions in creating classroom activities entirely compatible with the 21st-century learning environment. It also broadens educators' perspectives on the critical role of emerging technologies in the classroom, allowing them to discuss the proper use of such technology in various situations, transforming them into highly successful 21st-century instructors.

The evolution of multimedia is the tale of the rise and convergence of these technologies. Multimedia artifacts (text, images, video clips, and so on) are crucial building blocks for creating and expressing a student's learning for many reasons (Pea,1991).

Home Economics is a vocational subject that provides students with the essential practical knowledge and social skills to be productive members of society (Alabi,2013). In addition, it covers all of the core skills required to run a successful family. It is a field of study that teaches numerous areas of home economics by combining concepts, principles, and theories. Home Economics is a concept that focuses on enhancing the individual's, family's, and society's quality of life. Home Economics teachers must be well-informed and knowledgeable about current trends and changes in the field, such as using ICT to help students achieve the subject's core goal. Home economics is a skill-oriented subject, so to implement it effectively, it must recognize the importance of information and communication technology (ICT) and provide students with a wide range of real-world experiences through the use of ICT-based teaching resources like computers, radios, televisions, films, strip projectors, electronic boards, and projected instructions.

In 2017, the Commission on Higher Education (CHED) developed a new curriculum, no. 78, entitled Bachelor of Technology and Livelihood Education (BTLED). The Bachelor of Technology and Livelihood Education (BTLED) program's primary concern is preparing Technology and Livelihood Education (TLE) teachers in grades 4-8. The Bachelor of Technology and Livelihood Education (BTLED) is a four-year program offering four majors: Agri-Fishery, Industrial Arts, Information and Communication Technology, and Home Economics. It also seeks to train highly qualified and enthusiastic technology and livelihood education teachers for Grades 4 to 8. This curriculum focuses on the different fundamental skills of these four other significant areas. General Education Courses, Professional Education Courses, Major Courses, Research Courses, and Mandatory Courses (P.E. and NSTP) comprise the curriculum. Teachers handling Technology and Home Economics subjects (THE/TLE) should be encouraged and motivated to pursue a higher level of education to update and upgrade themselves. They should undergo more relevant training, attend advanced courses, and obtain a higher degree to be qualified to teach. The identified programs can be formalized and presented to the TLE teachers for possible adoption to enhance their competency level and, in turn, ensure a better teaching performance of Technology and Livelihood Education subjects. (Aquino & Manuel, 2018)

2. Theoretical Framework

This research is anchored by the Cognitive Theory of Multimedia Learning, created by Richard E. Mayer in his book entitled "Multimedia Learning" (2020). This theory is one of the primary theories that inform multimedia-based instruction in any discipline, including BTLED Home Economics. The three primary tenets of this idea are as follows:

- Dual-Channel Assumption: Text and visual information are processed by distinct brain regions in humans due to distinct information processing channels for each type of content.
- Assumption of Limited Capacity: The ability of the verbal and visual processing systems to

process information at any one time is finite.

• The Active-Processing Assumption states that learning occurs most effectively when students actively participate in pertinent cognitive processing, such as focusing on the provided information, arranging it logically, and combining it with previously acquired knowledge.

Based on these presumptions, Mayer suggests the following guidelines for successful multimedia instruction: Principle of Coherence: Instruction should be brief and targeted, with no unnecessary material included that could divert attention from the learning goals. Signaling Principle: Significant information should be emphasized or indicated to direct students' attention. Redundancy Principle: It is not appropriate to employ narration and text simultaneously. Principles of Spatial and Temporal Contiguity: To promote information integration, corresponding text and visuals should be displayed simultaneously and nearby. Modality Principle: To fully utilize our dual-channel processing capacities, information should be given in both visual and auditory modalities. Principles of Segmenting and Pre-training: To aid learners in assimilating new material, complex information should be divided into digestible chunks, and learners should get pre-training in essential concepts.

Mayer established this theory, highlighting the utilization of visual and aural channels for information processing. It can be used in home economics to create educational resources that make good use of text and visuals, including interactive diagrams, narrated video demonstrations, or multimedia presentations that blend text, sound, and images to clarify intricate ideas.

Applying these ideas in BTLED Home Economics could entail giving students interactive multimedia activities that let them put what they've learned into practice, using video demonstrations of techniques, audio narration to explain complicated processes, and clear and concise multimedia presentations to explain concepts. Multimedia training can be created to improve understanding and retention of home economics topics and skills by considering the cognitive processes involved in learning.

The second theory that supported this study is Roblyer and Doering's Technology Integration Planning (TIP) theory (2013). This theory was developed with teachers in mind as a framework for ensuring the effective integration of technology in the classroom. Using TIP, teachers can recognize and solve issues related to incorporating technology into their teaching practices.

Three steps were involved in helping the teachers incorporate technology into their lessons: Phase 1 involved analyzing the needs of both teaching and learning; Phase 2 involved planning the integration; and Phase 3 involved post-instruction analysis and adjustments. The International Society for Technology in Education provided support. (ISTE). A nonprofit organization called ISTE encourages using technology to improve and supplement instruction. ISTE has developed three standards to improve communication and empower administrators, teachers, and students: standards for administrators, standards for instructors, and standards for students.

This theory can help you create a thorough plan that will ensure the integration of multimedia technology into BTLEd Home Economics instruction is in line with the subject's overall goals and objectives.

Jean Piaget's Constructivism Theory states that learning happens when people create their learning strategies and knowledge base. It says that the student has to increase their knowledge. The instructor can help with the building. While the instructor establishes an efficient learning environment, the formation of knowledge is a dynamic process that calls for the active participation of the learners. One of the key factors influencing student achievement is teacher competency. This theory backs up the notion that multimedia-based instruction can allow students to actively participate in home economics through inquiry, building knowledge, and active involvement. The instructor needs to be adept at managing the process of learning. When constructivism is used, this becomes much more important. (Falk and Darling-Hammond, 2017)

Online collaborative learning (OCL) is a theory in which the lecturer guides the students in

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group problem-solving activities. Before combining, contrasting, and analyzing their ideas, students try to reach a consensus by synthesizing them. In addition to giving students resources, input, and feedback, the instructor facilitates this process. This learning theory prioritizes conversation over memorizing and reading. It can also be used to investigate how online collaborative learning experiences in BTLEd Home Economics can be facilitated by multimedia-based instructions, allowing students to collaborate, exchange ideas, and benefit from one another.

According to the Commission of Higher Education (CHEd) memorandum order number 78-s.-2017 to give instructors the skills they need to use technology effectively in teaching and training, information communication technology in the classroom is a crucial component of the methodologies and tactics courses.

Based on the theories mentioned above, improving student learning, encouraging active participation, and developing collaborative learning through multimedia technology in the classroom is possible.

3. Research Questions

- What competencies do students need in the identified major areas in home economics?
- What multimedia is preferred by home economics professors in teaching the needed competencies in the BTLEd home economics program?
- What challenges do home economics students encounter in using multimedia for instruction?

4. Research Methods

This study used a mixed-methods research design that combines qualitative and quantitative descriptive research techniques to provide a thorough grasp of the research subject.

The researcher worked with forty-two (42) Bachelor of Technology and Livelihood Education students in Home Economics (BTLED), representing 100 percent of the total number of Home Economics students; 26, or 61.90 percent, were enrolled in the day program, and 16, or 38.10 percent, were enrolled in the evening program. Another group of respondents was 7 Professors, or 100 percent of professors handling home economics subjects; six were Ph.D. holders, one had a Master's degree holder, and all specialized in Technology and Home Economics. All Instructors attended and participated yearly in all training and seminars related to home economics to upgrade and enhance their knowledge and skills. Most of the faculty have already been teaching for over 15 years.

This research was conducted at Cebu Technological University- Main Campus, Cebu City, Philippines. The researcher prepared a letter requesting permission to conduct the study, addressed to the Campus Director of Cebu Technological University- Main Campus.

The researcher made a questionnaire to the respondents. The items and content were taken from reading textbooks, surfing the net, and browsing websites. The researcher referred the questionnaire to some professors in the State Colleges and Universities (SUC) specializing in Home Economics using email and Zoom meetings and three professors handling research subjects for comments and suggestions. The survey questionnaire was improved and refined based on the corrections and comments. The questionnaire was on a 3-point rating scale of very much needed (VMN) =3, Needed (N) = 2, and Less Needed (L.N.) = 1. The first Part contained the competencies students need in the identified major areas in HE, while in the second part, the questionnaire still was on a 3-point rating scale of very much preferred (VMP) =3, Preferred (P) = 2, and Less Preferred (L.P.) = 1 contained the multimedia preferred by the home economics teachers. The last part of the questionnaire checks the challenges home economics students encounter.

4.1 Method of Data Collection and Analysis

The questionnaire was administered via Google Forms through students' email with the help of their class mayors to all forty-two (42) students. Data were collected and retrieved. Data were analyzed using mean, standard deviation, frequency count, percentage, and rank order.

The results were tabulated using 3- a 3-point scale and computed using weighted mean and standard deviation. Data were analyzed with mean and standard deviation. 2.50 - 3.00 as Very Much Needed, 1.50 - 2.49 Needed, and 1.00 - 1.49 as Less Needed. The last part of the questionnaire utilized the ranking of data by getting the percentage of students who responded to determine the challenges encountered by the students in multi-media-based Instruction. At the same time, Instructors also use a three-point scale of 3-Most Preferred, 2-Prefered, and 1-Less Preferred. 2.50 - 3.00 was Most Preferred, 1.50 - 2.49 was Preferred, and 1.00 - 1.49 was Less Preferred. Also, the data were analyzed with mean and standard deviations in teaching major subjects in home economics while utilizing multimedia-based instruction. In contrast, the qualitative data analysis focused on the difficulties the participants faced when utilizing multimedia to attend classes. Thematic analysis of Braun and Clarke (2006) was used. The participants ' challenges were validated through a Google Forms questionnaire where students described their experiences utilizing multimedia to learn identified primary themes in home economics. A few procedures were followed to complete the thematic analysis. The transcripts were first read aloud several times to become comfortable with them, and then themes were looked up and examined.

5. Results and Discussions

This section provides a comprehensive analysis and interpretation of the data collected during the research process.

5.1 Research Question 1: What competencies do students need in the identified major areas of home economics?

The Needed Competencies in the Identified Major Areas in Home Economics

Table 1 presents the distribution of the students in the different Needed competencies in the identified major areas in Home Economics.

Table 1 . Students Needed Competencies in the Identified Major Areas in Home Economics

Students Needed Competencies in Home Economics	x	SD	Verbal Description
Arts and Crafts			
Develop confidence, competence, imagination, and creativity to work with traditional and new media	2.62	0.575	Very Much Needed
in arts and crafts.	2.02	0.575	very much receded
Develop basic skills in digital photography and image processes.	2.57	0.623	Very Much Needed
Identify materials, tools, and equipment for making fashion accessories.	2.62	0.653	Very Much Needed
Average Weighted Mean/SD	2.60	0.617	Very Much Needed
Clothing			
Take body measurements accurately.	2.69	0.597	Very Much Needed
Demonstrate ability to create various hand and machine seam finishes.	2.52	0.698	Very Much Needed
Determine appropriate clothing selections for specific activities.	2.57	0.623	Very Much Needed
Average Weighted Mean/SD	2.59	0.639	Very Much Needed
Family Life and Child Development			
Analyse the factors to consider in getting married.	2.55	0.730	Very Much Needed
Discuss how vital the legal aspects of marriage are.	2.57	0.729	Very Much Needed
Explain why growing is considered a fantastic process.	2.48	0.698	Needed
Average Weighted Mean/SD	2.53	0.719	Very much Needed
Food Science and Nutrition			
Apply knowledge of food preparation on a limited budget.	2.5	0.732	Very Much Needed
Develop skills in planning a menu for a special occasion	2.48	0.732	Needed
Name the essential nutrients in each food group and investigate how the body uses these nutrients.	2.59	0.726	Very Much Needed
Average Weighted Mean/SD	2.52	0.73	Very Much Needed

Students Needed Competencies in Home Economics	\bar{x}	SD	Verbal Description
Home Management			
Demonstrate ability to decorate a home.	2.42	0.728	Needed
Use the decision-making process in solving simple family problems.	2.5	0.627	Very Much Needed
Recognize the importance of resources in achieving family goals.	2.6	0.620	Very Much Needed
Average Weighted Mean/SD	2.51	0.658	Very Much Needed
TOTAL: Average Weighted Mean/SD	2.55	0.673	Very Much Needed

Legend: 2.50 - 3.00 Very Much Needed; 1.50 - 2.49 Needed; 1.00 - 1.49 Less Needed

As reflected in the Table, the level of the identified area includes the skills of Arts and crafts, Clothing, Family Life, Food Science and Nutrition, and Home Management. This is based on the CHED Memorandum (CMO) order no. 78 s. 2017. All different home economics areas and essential skills competencies were emphasized since this covers all areas with limited hours per semester. As revealed in the table, all competencies were considered "Very Much Needed" by the BTLED HE students. A detailed examination of the table indicated that the average weighted mean for the number of competencies required in the various abilities in home economics differed only slightly. The result displayed that the weighted mean was close to each other, and Students also understood that all major areas were essential in their field of specialization. Generally, most students who took up BTLEd-HE graduates from the Technical Vocational and Livelihood (TVL) -HE tracks, which means they already have the skills since Senior high school and want to enhance and improve their skills in Home Economics. Students also hope to land a job immediately after graduation.

The table also revealed that Arts and Crafts is the "Very Much Needed" identified area in home economics, with a total weighted mean of 2.60 and a standard deviation of 0.617, followed by Clothing and Food Science and Nutrition, both with a total weighted mean of 2.59 and standard deviations of 0.639 and 0.73. Since most Technology and Livelihood Education (TLE) teachers show enthusiasm for these fields of specialization while teaching HE, students were more interested in developing, enhancing, and improving themselves in these identified areas. Also, students thought these areas were enjoyable and challenging while performing all laboratory activities through multimedia. Another "Very much needed" identified area was Family Life and Child Development, with a total weighted mean of 2.53 and standard deviation of 0.719, and Home Management, with a total weighted mean of 2. 51 and standard deviation of 0.658, which can relate easily and practical for all students majoring in home economics. After exploring all these different areas, they will be more skillful and knowledgeable since they were all encouraged and involved in performing all hands-on activities through multimedia. Thus, Home Economics graduates can land a teaching job immediately with the implementation of the K-12 program of the Department of Education (Dep. Ed.)Due to their exposure to practical experiences, most graduates from the various State Colleges and Universities were hired right away for teaching positions. Most Instructors are also knowledgeable and skillful in teaching Home Economics. Furthermore, most students at another university consider disciplines relating to main areas of home economics, such as Food & Nutrition, Clothing & Textile, and Home Management, to be the most engaging, meaningful, relevant, and applicable in everyday life. However, they wanted to balance these courses' practical and academic aspects (Siddigue, Nazir, and Malik, 2002.)

5.2 Research Question 2: What multimedia is preferred by the home economics professors in teaching the needed competencies the BTLEd Home Economics program?

Preferred Multimedia Used by the faculty in handling Home Economics Class

Table 2 shows the faculty's preferred multimedia-based instruction in Home Economics.

Table 2. Preferred Multimedia-Based Instruction Used by the Home Economics Professors

Different Multimedia	\bar{x}	SD	Verbal Description
Broadcast Media-Inspired (Radio and Television)	2	0.756	Preferred
Face to Face (Talk Show)	2.86	0.35	Most Preferred
Classroom polls	2.71	0.184	Most Preferred
Digital Camera (Photos and Videos)	2.57	0.202	Most Preferred
What's in the Video	2.57	0.202	Most Preferred
Digital Travelogue	2.57	0.202	Most Preferred
Soap Opera Galore	2.57	0.202	Most Preferred
Yes or No Game (Game Show)	2.57	0.202	Most Preferred
Showtime (Variety Show)	2.43	0.297	Preferred
E-React (Electronic Reaction)	2.43	0.297	Preferred
F.B. Wall Post	2.14	0.143	Preferred
Selfie to the Max	1.71	0.286	Preferred
Average Weighted Mean /SD	2.43	0.293	Preferred

Legend: 2.50 - 3.00 Most Preferred; 1.50 - 2.49 Preferred; 1.00 - 1.49 Less Preferred

As shown in Table 2, home economics faculty used different multimedia-based instruction in home economics. They rated all items Preferred with an average weighted mean of 2.43 and an average standard deviation of 0.293 in teaching the needed competencies in the identified areas in home economics. Some of the faculty were still adjusting and acquiring skills to utilize multimedia- in teaching the identified major areas in home economics, specifically in hands-on activities. All teachers are expected to integrate and develop ICT-related skills in their classrooms. Educators need to be aware of the opportunities presented by technology and make effective use of it. (Veeber and colleagues, 2017).

Other Home Economics faculty require enough time to explore and apply the technical skills needed, particularly those with limited technical knowledge. However, all faculty are always encouraged to join training and seminars, particularly in using multimedia in teaching. Although many of these more recent technologies may seem alien to more experienced teachers, students entering colleges today are accustomed to creating, learning, and communicating using technology. (Green & Hannon, 2007)

Aprinaldi et al. (2018) stated that using computers in everyday life is a real-world example of how the SAMR model is used. In the substitution level, computers equipped with word processing software, such as M.S. Word, take the role of paper and pencils in the writing process. We employ the same software with additional features like grammar and spelling checks at the augmentation level. We may connect to the internet using the same machine at the modification level. We can collaborate remotely with our colleagues using a Google Docs app. The app even allows us to correct each other's work. By utilizing the same computer and the internet at the redefinition level, we may add several other fascinating things to our job. Some of them make use of multimedia, like digital storytelling. The substitution level of SAMR model implementation alters the traditional learning tools and activities the most out of the four levels. With this step, instructors and students have a significant chance to reinvent their educational system to meet the demands of today's digital native learners.

5.3 Research Question 3: What challenges do home economics students encounter in using Various multimedia for instruction?

Challenges Encountered by Bachelor of Secondary of Technology and Livelihood Education (BTLED) Home Economics Students in Using Multi-media based Instruction

Students in the Philippines need help with integrating multimedia-based instruction into home economics classes. Although many exciting prospects exist for interactive and captivating learning experiences when using multimedia technologies, students may need help using these resources effectively. In the context of continuous online learning, one of the realities facing a developing nation like the Philippines is that it faces challenges. Students encountered various difficulties when

participating and being present in online classes. Their perceptions of their online course detailed their challenges with distance learning, contributing to their tardiness, absences, and late turn-ins of homework and assignments (Jaca,2022). The study utilized Braun and Clark's (2006) thematic analysis technique to ascertain recurring themes concerning participants' obstacles while using multi-media-based instruction in home economics. The six-phase approach was thought to include data familiarization, code construction, topic identification, theme evaluation, theme naming, and report preparation for a trustworthy thematic analysis. This entails identifying the most significant themes in a data set and reporting, organizing, interpreting, and analyzing them (Braun & Clarke, 2006). This section sheds light on Filipino students' difficulties when utilizing multimedia-based instruction in home economics.

In this study, students express their sentiments on using multimedia-based instruction to learn the identified major home economics areas. Four significant themes were generated:

1. No internet access/connections, 2. Lacks computers and gadgets, 3. Lacks familiarity with multimedia, and 4. Computer illiterate. These themes are explored in this section taken from the students' responses to the researcher-made questionnaire used as support. Different possible solutions were discussed to help students face the challenges they encountered.

Theme 1: No Internet access/connections

Students find it challenging to visit a website on their phone or laptop; they are in an area without a Wi-Fi network or a cell phone data signal. Consequently, they need help connecting to the internet and loading the website they would like to visit. Then, during class hours, home economics students emphasized that most lived in the Province of Cebu, where there is no service provider nearby, and it took a lot of work to locate a stable internet connection.

Solution: The best solution for this problem is for the students to move elsewhere. They are in an area with poor signal or no Wi-Fi coverage. In that case, they move to a different location to get a stronger signal or access a Wi-Fi network so that other students look for an elevated place like hills or climb some trees to connect and join the class. Sometimes, a simple device reset can also fix connectivity problems. They should switch off their laptop and device, wait a while, and then turn it back on.

Theme 2: Lacks computers and Gadgets

Undoubtedly, students enrolled in Philippine government universities need more financial resources to utilize their devices and laptops for multimedia-based instruction or blended learning sessions. This is the second common challenge home economics students encounter. They need assistance with computers and gadgets.

Solution: An excellent solution for this problem is to provide students from low-income families with free or heavily discounted technology that the government can implement. It is possible to guarantee equitable access to instructional materials and to bridge the digital device. However, the government needs more funds to subsidize their free education program, so this is impossible for students in the Philippines. Teachers, on the other hand, are utilizing offline resources. Although technology is helpful, educational institutions can offer substitute materials to students without access to technology, including learning modules, textbooks, printed materials, and offline learning activities— without using electronic devices. At the same time, students with access to electronic devices can help their classmates by working together on projects or sharing devices.

Theme 3: Lacks Familiarity with multi-media

Another challenge the students encountered was the need for more knowledge of multimedia. Students who need to improve in multimedia may find it challenging to contribute to online forums, read instructional materials, or even use the internet safely. In the digital world, having this skill set is becoming increasingly crucial when it comes to this difficulty.

Solution: Utilize internet tutorials. The abundance of online resources makes multimedia skill learning easy. Online tutorials on various subjects are available for free or at a reasonable cost through websites such as Coursera, Khan Academy, and YouTube. We then urge students to assist

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one another through peer-to-peer learning. Multimedia experts can help others with difficulty and encourage teamwork in the classroom.

Theme 4: Computer Illiterate

The last common challenge for students is they need to be computer literate, especially those who studied secondary education in rural areas. Some students have yet to develop computer skills and are uncomfortable with simple tasks like typing, utilizing a mouse, or navigating between various software programs. Due to his low computer literacy, he finds it challenging to participate in online classes or finish homework online. This may also put students at a disadvantage when it comes to working with classmates and finishing homework.

Some students need to be more knowledgeable about using technology, which can cause delays in submitting different learning activities. Older students were considered slow learners. They cannot easily absorb new information related to technology since they are not knowledgeable enough and not fond of exploring new things compared to new generations. Teachers from rural schools should have formally introduced technology to their students. In the Philippines, the adoption of new technology is not fast and up to date compared to other Asian Countries. Adopting new technology, specifically in teaching, takes much time. This is probably one of the reasons why there were students also who were computer illiterate. Students' most significant challenge was linked to their learning environment at home, while their most minor challenge was technological literacy and competency. Based on the student's responses, especially regarding the quality of learning experience, mental health, finances, interaction, and mobility (Barrot et al., 2021)

Solution: The best possible solution to this problem is complete computer skills instruction can be offered in schools. Software applications, internet usage, online safety, and fundamental operations can all be covered in these programs. Another solution is to assist students in becoming more computer literate and offer workshops or training sessions on technology. Educators, I.T. specialists, or outside specialists might lead these sessions. Learning can be improved and more engaging by incorporating practical exercises and hands-on activities. With the help of these solutions, home economics students should be able to receive multimedia-based instruction that is both inclusive and productive. Rasheed et al. (2020) stated that the challenges students face with using technology reported that students' poor time management skills and technological illiteracy have led to delays in getting immediate feedback from teachers, thereby rendering students feel uninterested, which leads to procrastination behavior in their study—similarly reported that blended learning students face a challenge in learning new technology, especially by adult students. This finding aligns with the survey explaining why students get intimidated by technologies for their online activities, as reported from our study findings. Lastly, it stresses the need for technological competency among students.

6. Conclusions

Home Economics students in developing countries grapple with the challenges of needing internet access/connection to attend their classes in home economics. They require assistance loading the desired webpage and establishing an internet connection. Afterward, home economics students underlined in class that most of them resided in the Province, where there was no service provider nearby, and finding a reliable internet connection required a lot of work. Most students also need more computers and gadgets for the class; undoubtedly, students enrolled in Philippine government universities need more financial resources to utilize their devices and laptops for multimedia-based instruction or blended learning sessions. Moreover, A Lack of experience with multimedia might make it difficult for students who need to get better at it to read textbooks, participate in online forums, or even use the internet safely.

Because of this challenge, having this skill set is becoming increasingly critical in the digital world. Other Students need to gain computer skills and the ability to perform basic tasks like typing, using a mouse, or switching between different software applications. Their low computer literacy

makes it difficult for them to complete assignments and engage in online classes. Additionally, this can make it more difficult for them to collaborate with peers and complete assignments.

7. Recommendations

To guarantee that all students have equitable access to digital resources and the know-how to use them, the school should create a thorough Digital Inclusion Program. By implementing this program, the school will be able to address digital literacy, device shortages, and internet access in a comprehensive and coordinated manner. In addition, giving students the tools and abilities they need for multimedia-based learning would foster an inclusive and equitable digital learning environment.

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