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RESEARCH ARTICLE

LIVED EXPERIENCES OF SHS LEARNERS USING RADIO-BASED INSTRUCTION MODALITYIN THE DIVISION OF PROVINCE OF TARLAC

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Abstract

This research was to study the lived experiences of senior high school learners from the division of the province of Tarlac in using Radio-Based Instruction as a learning modality. It determined the lived experiences of the informants through a hermeneutic phenomenological approach. The qualitative information gathered was then categorized through information coding. The research findings reveal that the students experienced learning difficulties such as technical, individual, institutional, and domestic difficulties in using the RBI as a learning modality. The techniques and other learning methods that the students used to overcome learning difficulties include the use of online alternatives, improvement of technical skills, learner motivation, interaction with co-learners and teachers, and change of learning environment. This study also showed the learning advantages the students experienced in using RBI namely comprehensibility and clarity of instruction, intrapersonal motivation, learner-to-teacher collaboration, convenience, and cost. Meanwhile, the students' perceived limitations of RBI were found out to be academic skills, learner motivation, time and support for studies, cost and access, and technical problems. Finally, the study also revealed that the students perceived RBI to have positive effects on their academic performance. with all 15 participants agreeing that RBI positively impacted their academic performances.

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Introduction:-

The global catastrophe brought by the COVID-19 pandemic caused devastating effects even in the biggest global economies. Many countries worldwide faced recessions that are much larger than what economies faced in the 2008 financial crisis (World Bank Group, 2020). With all the existing COVID-19 related policies and restrictions, continuing education was also put at risk. Few months into the outbreak in April 2020, the United Nations had already recorded at least 94 percent of the total number of learners worldwide being affected by the pandemic. This number represents over 1.58 billion learners from pre-primary up to higher education from 200 different countries (UN, 2020). About 28 million learners in the Philippines were also not exempted from the learning difficulties that the pandemic has brought (UNESCO as cited in Tria, 2020). More than a year into the outbreak of the pandemic in the Philippines, the ease of the national policies is still indefinite. Thus, the leaders for both basic and higher education worked on coming up with plans to sustain learning and education in the country even for what is now called the "new normal" (Tria, 2020). The higher education sector, headed by the Commission on Higher Education,

was allowed to have academic freedom, allowing them to implement e-learning, distance learning, and other alternative modes that are convenient and available. Universities and other higher learning institutions were granted the prerogative to implement their strategies and policies regarding the opening of their classes (CHED as cited in Tria, 2020). On the other hand, the basic education sector under the Department of Education (DepEd) also ensured that education and learning would continue, given that all processes still follow national policies and other health protocols. The challenges and risks that the sector was facing were acknowledged by the department's secretary herself, Secretary Leonor Briones.Hence, the creation of the department's Learning Continuity Plan (BE-LCP) (Montemayor, 2020).

The BE-LCP is DepEd's commitment to continuous learning and education with the safety and well-being of its learners, teachers, and other personnel as the top priority. The BE-LCP was implemented in the adjusted school year opening in August and October 2020. This device catered to at least 30 million learners, teachers, and other personnel under the basic education sector (DepEd, 2020). The BE-LCP introduced four Learning Delivery Modalities: a) Face-to-Face where both the learners and teachers are present in the classroom physically; b) Distance Learning that occurs between the learner and teacher while geographically remote; c) Blended Learning which is a combination of both face-to-face learning and any of the available distance learning modality types; and d) Homeschooling which requires a relevantly trained parent, guardian, or tutor who can facilitate learning in a homebased environment. Given the data collected by the authors of the BE-LCP and the epidemiological state of the country, the department acknowledged that that distance learning modality will be the primary learning delivery modality for the school year, as being back to the normal state remains uncertain.

Distance Learning is a mode of learning that has been existent for decades already. In their study, Dangle and Sumaoang (2020) defined Distance Learning as "a learning delivery modality where learning takes place between the teacher and the learners who are geographically remote from each other during instruction." It is also defined by the United States Distance Learning Association in 1998 (Roblyer& Edwards as cited in King et al., 2001) as "the acquisition of knowledge and skills through mediated information and instruction, encompassing all technologies and other forms of learning at a distance (p. 192)." Given these definitions, it is concluded that Distance Learning is a learning delivery modality that uses any form of instructional materials, including various channels and technologies, to conduct learning instruction between the teacher and the learners while physically apart. At present, DL is already feasible using three types of instructions, as also already introduced in the DepEd BE-LCP: Modular Distance Learning, Online Distance Learning, and TV/Radio Based more Instruction.

At present, DL is already feasible using three types of instructions, as also already introduced in the DepEd BE-LCP: Modular Distance Learning, Online Distance Learning, and TV/Radio Based more Instruction. Positive regard towards DL is evident in several previous studies done within and outside the Philippines. Some of the advantages experienced and enjoyed by many DL learners from local and international institutions are as summarized in the table below.

Study and Author	Location	Advantages
Mobo& Sabado (2019)	Olongapo City	Flexibility to time
		Easy to study and answer online activities because of well-
		designed and user-friendly interface
Francisco & Barcelona	Malolos, Bulacan	Accessibility (easy to access and easy to use)
(2020)		Time management (allows students to maximize time)
		Promptness (trains students to follow schedules and deadlines)
		Challenge (challenges both teachers and learners to improve)
Fidalgo et al. (2020)	Portugal, Ukraine,	Management of class and study time (learners can adjust their
	& UAE	study and class schedules)
		Time efficiency (reduce the time needed by choosing study
		locations)
		Individual pacing (students can learn and work at their own
		pace)
		Location (DL does not require traveling to school)
		More options for courses or colleges
Chua et al. (2020)	Cavite	Convenience (professors find platforms like FB Messenger
		convenient for learning)
		Experience (students find e-Learning platforms enjoyable)

Dangle	&Sumaoang	La Union & Baguio	Individual pacing (learners can choose self-pacing for learning)
(2020)			Variety and flexibility (for teachers and staff)
			Adaptability (increased adaptability for instructional materials
			to be used)

However, just like any other solution available, the use of DL as a new learning method also posed different challenges. Diaz et al. identified three gaps that emerged in the sudden change of learning modality to online: a) Access Gap, b) Use Gap, and c) Gap in Teacher Skills. Baticulon et. al. (2020) also conducted a study among 3,670 medical students across the country and categorized five barriers in the implementation and effectiveness of the Online Learning Modality. These include technological, domestic, individual, community, and institutional barriers. Furthermore, the disadvantages and barriers in implementing online learning in the Philippines were thoroughly proven and discussed in a study by Marcial et al. (2020), citing barriers such as administrative/instructor issues, social interactions, academic skills, technical skills, learner motivation, time and support for studies, cost and access to the internet, and technical problems. Other disadvantages recorded in the use of this type of DL include time pressure (Francisco and Barcelona, 2020), difficulty in staying motivated, lack of immediate feedback from teachers/instructors, challenges in communicating with instructors and peers, and the absence of campus life (Fidalgo et al., 2020). Modular Distance Learning also posed challenges that include the requirement for stronger self-motivation and self-discipline among students and greater workload in increased preparation time and administrative processes involved in tracking student performances among teachers and staff (Dangle &Sumaoang, 2020).

In the Learning Delivery Modalities included in the BE-LCP, radio was included as n learning channel under Distance and Blended learning, which many educational institutions adopted. Various studies worldwide prove the effectiveness and positive effects of Radio-Based Instructions. The Development Research Group of The World Bank (2005) cited in their study that students from rural and hard-to-reach areas exposed to Radio-Based Instruction programs tend to have achievements that are as high as those of students in the urban areas. It also mentioned the results of the Guinea Fundamental Quality and Equity Levels (FQEL), citing Guinean students in rural classrooms that optimized the FQEL's IRI programs scored as high as students in the urban areas on math achievement tests and French language. Other studies also show improvements in the performance of out-of-school school-age children, especially in language, reading, writing, and math (Goldstein and de De Jesus, 1995 as cited in The World Bank, 2005). In summary, IRI exposure can be associated with higher levels of academic achievement and performance among students (Ho and Thukral, 2009 as cited in Olakulehin, 2016).

In this study, the proponents aim to determine the lived experiences of senior high school students in the province of Tarlac in their use of RBI as a major learning delivery modality, as provided by the DepEd BE-LCP. The proponents look into understanding the difficulties, benefits, and other learning experiences of the students who participated in this study to provide a better understanding of the effects, advantages, and disadvantages of RBI as a learning delivery modality, as perceived by students who were already exposed to its use.

Methodology:-

The researchers established this study on a qualitative research approach, primarily because this approach was found to be useful and effective in analyzing and understanding the meaning that people give to their lived experiences (Merriam as cited in Grundmeyer, 2012).

Research Design

This study followed a hermeneutic phenomenological research approach. This research method is deemed relevant to the current study as it allows for a detailed and intensive analysis of the lived experiences of the students who were exposed to Radio-Based Instruction. The phenomenological approach covers the discovery of knowledge on the experiences of the participants based on their perspectives. Meanwhile, the hermeneutic approach to phenomenology involves the interpretation and understanding of this knowledge and information (Neubauer, Witkop &Varpio, 2019). Hence, the use of hermeneutic phenomenology for this study.

Phenomenology is a method that courses its roots back to philosophical disciplines (Aguirre & Jaramillo as cited in Fuster, 2019) and many researchers utilize phenomenology to approach various qualitative studies (Neubauer, Witkop & Varpio, 2019; Frechette et al., 2020). Shabazian (2015) defines hermeneutics as the "...understanding and interpretation of linguistic and non-linguistic expressions." It provides the meaning of verbal and non-verbal

behaviors, including cultures and systems according to Velez and Galeano (as cited in Fuster, 2019). Thus, it can be therefore inferred that the Hermeneutic Phenomenological approach to research (Neubauer, Witkop &Varpio, 2019) involves providing description and interpretation to the perceived lived experiences of the subjects of the study (Fuster, 2019).

The researchers gathered information from selected Senior High School learners from schools in the Division of Province of Tarlac using structured interviews through Google forms, where participants were given the freedom to explicitly narrate their experiences. The researchers used the Hermeneutic Phenomenological approach to better describe, understand, analyze, and interpret the contextual data collected.

Participants

The participants of the study were mainly Senior High Schools students from selected public schools in the Division of the Province of Tarlac who already utilized. The researchers used maximum variation sampling to determine the participants of this study. The researchers used this sampling technique mainly because it allows a wider range of information on the experiences of different people and settings (Elmusharaf, 2016).

To determine the participants of the study, the researchers coordinated with various schools under the Division of Province of Tarlac that already synthesized RBI into their learning system. Two public schools responded and agreed to cooperate in the said study. There were 15 Senior High School students, 9 Grade 12 and 6 Grade 11, who agreed to participate in the study. Among the participants, there were four from the Science, Technology, Engineering and Math Strand, three from the General Academic Strand, four from the Accounting Business and Management Strand, three from the Humanities and Social Sciences Strand, and one from the Technical-Vocational-Livelihood Track. The ages of the participants ranged from 16 to 21 years old.

Data Collection Technique

Because of the restrictions that the local governments mandated concerning the COVID-19 pandemic response, the interviews cannot be done in person. As also requested by the participating schools, to ensure the safety of their students, the interview and data collection was only done via online and digital platforms.

First, the researchers sent request letters to the principals and supervisors of selected schools in the Division of Province of Tarlac that offer RBI learning modalities. The schools that responded were La Paz National High School and Gerona Western National High School.

Second, students were then contacted by the researchers via mobile and online platforms such as call, text, email, and online chats. The researchers explained the context and purpose of the study to the students.15 students responded and agreed to participate in the study.

Third, for the data gathering, the materials used by the researchers include a demographic profile questionnaire and an interview question guide. The interviews were then conducted through online chat for the participants who had the time to engage with the researchers. On the other hand, other participants were not able to take the time to have actual conversations with the researchers and thus, chose to answer the questions in Google Sheets instead.

Data Analysis

All the data collected through the interview process were transcribed and then summarized. The researchers then used data condensation to eliminate irrelevant information and to narrow down the responses of the participants.

The researcher categorized the qualitative data into themes that were established on the research questions. Overall, six themes were created: Learning Experiences, Learning Difficulties, Techniques, and Learning Methods to Overcome Learning Difficulties, Learning Advantages, Limitations of RBI, and Effect on Academic Performance. The answers of the students to the interview questions were carefully analyzed and categorized under these themes. To give a more precise analysis of the collected data, the researchers also developed codes or categories to describe the answers of the participants in shorter words or phrases.

Scope and Limitations

This study only covered the lived experiences of Senior High School students at selected schools in the Division of the Province of Tarlac who already have Radio-Based Instruction in their Blended Learning systems. It only covers

students enrolled in grades 11 and 12. Furthermore, because not many schools already adapted Radio-Based Instruction as part of their learning modalities, only a few schools were qualified to take part in the study. Among the qualified schools, only two public schools accepted the invitation, and no one from the private schools. The number of schools that cooperated was also a limitation as the researchers do not have the authority and the control as to which schools would be willing to participate.

Although the researchers tried to reach a maximum variation in the participants, the limitation in the number of advised participants was also an issue. Of the 15 participants, not all strands and tracks in the Senior High School were covered. Almost all the participants came from the Academic Track, only one was from the Technical-Vocational-Livelihood Track, and none from both the Arts and Design Track and Sports Track. This was also because the participating schools were not offering some of the tracks.

Results And Discussions:-

The primary purpose of this study was to better understand the lived experiences of the Senior High School students in using Radio-Based Information. The objectives include knowing the challenges the students face and the coping methods they use to overcome these challenges. It also includes the advantages they perceive in using the learning modality and the limitation of using it as a learning system. The students also shared the effects that the RBI had on their academic performances in their perception. The researchers determined themes under these objectives.

Theme 1: Learning Difficulties

The first theme that emerged during the study was the learning difficulties encountered in using RBI. Although the primary goal of the RBI implementation was to aid the learning continuity, the useful effects of this learning modality cannot be absolute. There were still learning hurdles that challenged the students who utilized this learning method. The researchers categorized the learning barriers that participating students mentioned using the classifications mentioned by Baticulon et al. (2020). The identified learning difficulties include a) technological difficulties, b) individual difficulties, c) institutional difficulties, andd) domestic difficulties.

Although radio is considered one of the simplest information and communication technologies (Olakulehin, 2016), the signal, radio reception, or connection was a constant issue for most of the students. Among the 15 participants, 9 mentioned the challenges they encountered concerning technology. Technological difficulties include problems with the radio reception, connectivity, lack of equipment needed, and lack of technical skills that are requisite to the learning modality.

Participant 1 mentioned:

Sometimes, the radio reception is not stable...When the radio reception is not okay, there are parts of the lessons that we miss.

Participants 3 and 4 also echoed these sentiments. In the interview, Participant 4 shared:

When the radio reception is not okay, it is difficult to understand the lessons.

During the interview, the students also mentioned that one of the alternatives that those who were having problems with the radio reception was to attend the lectures through FB lives instead. However, the internet connection was even much challenging for the students.

Participants 7, 8, and 9 all shared this challenge. Participant 8 remarked:

...many of us just watch the lessons from the FB live instead... However, even the internet connection also usually acts up.

Furthermore, the technical barriers that involve the use of technical devices and their use were also a difficulty mentioned by the participating students. According to Participant 6:

We don't have a radio at home...our internet connection at home is also unstable, so it's still difficult to catch up on the lessons.

Participant 11 also mentioned:

I think because of the blended learning, we had to learn more skills, like technical skills.

Baticulon et al. (2020) also identified the barriers under the Institutional Difficulties, involving the overall learning system, including the utilization of learning materials, communication between the learners and educators, and other optimization of other learning methods and techniques. Of the 15 students who participated in the interview, 8 revealed that they encountered challenges under this category.

Participant 6 shared:

I learn better when I see examples or practical applications for our lessons. When listening to lectures on the radio, it is difficult for me to visualize the concepts and ideas.

Participant 7 mentioned he preferred seeing other communication factors like expressions:

I prefer listening or watching live via Facebook because it is where I see the presentations of the teachers... I can even see their gestures or facial expressions which is helpful.

Three of the participants also mentioned that they had difficulties because of the limited interaction between the teacher and the learners. Participant 7 also shared in the interview:

There is limited interaction between our teacher and us... We have teachers but we cannot communicate with them properly, so it's still difficult.

Participant 12 also shared the difficulties she had:

We cannot communicate with the teacher right away... The students cannot ask for clarifications right away.

Participants 7 and 15 shared the same opinions regarding delayed responses:

I experienced having questions regarding our lessons that I sent to my teachers. However, these questions were never answered.

The skills of the teachers in charge of the RBI were also a learning challenge as shared by the participants of this study. Two students also revealed that the instructions and discussions that their teachers use in the RBI learning modality were sometimes ambiguous and difficult to understand. Participant 10 shared:

There are topics that RBI cannot properly explain. Also, some instructions or activity directions are difficult to understand.

Meanwhile, Participant 13 mentioned:

...You cannot ask for immediate help from your teacher all the time... listen carefully.

Internal or individual difficulties also affect the overall experience of the students who use the RBI as a learning modality. As defined by Baticulon et al. (2020), these involve personal difficulties or issues such as study and learning styles or habits and other physical and mental difficulties. In the interviews, study habits, particularly, time management difficulties occurred to three participants. Participant 2 shared that waking up at the assigned time was a challenge:

I do not wake up on time to listen to the discussions during the air of the instruction.

Participant 5 also mentioned his difficulty in managing his time:

The biggest challenge to me is time or time management.

Meanwhile, Participant 10 also mentioned a personal difficulty regarding managing his time and his study habits. Participant 10 remarked:

Many parts of the lessons can be unclear for me even when I attend the discussions and participate in activities. Sometimes I get left behind from the lessons.

Another challenge wasthe unavoidable Domestic Difficulties that include the overall learning environment and atmosphere (Baticulon et al., 2020). 2 of the 15 participants mentioned how their current learning environments affect their overall learning experience. Participant 11:

Noisy surrounding...It's hard to focus with all the noise.

Participant 12 also rectified this issue in the learning environment:

There are many distracting chores or even background noises...Sometimes, it's hard to understand lessons because we are also at home.

Theme 2: Techniques and Learning Methods to Overcome Learning Difficulties

The second theme that emerged in the course of this study was the techniques and other learning methods that the Senior High Schools used to overcome the learning difficulties and challenges that they encountered in using RBI as a part of their learning system. Under this theme, five categories were identified: *Use Online Alternatives, Improvement of Technical Skills, Learner Motivation, Interaction with Co-learners and Teachers,* and *Change of Learning Environment*.

The Use of Online Alternatives in place of the limitations of the RBI was one of the methods that students used in adjusting to the challenges of this learning modality. The students revealed that one of the easiest and most effective resolutions was the utilization of online alternatives. Six of the 15 students shared that their primary alternative was going online to watch the recorded videos of the lessons covered in the RBI session or searching for information that would aid their self-study. Participant2 stated:

Whenever I miss the discussions, I just watch the replays posted on the Facebook page.

Participant 10 revealed to also do the same:

...just watch the recorded Facebook Live so that I do not get left behind in the discussions.

Because of her lack of resources, Participant 8 also mentioned just asking her neighbors to allow her to use their internet connection for her to access online alternatives to help her:

Sometimes, I just ask our neighbors to let me connect to their Wi-Fi... to access some resources on the internet that can help me to study the lessons that I missed on my own.

Furthermore, Participant 7 also mentioned that online alternatives help him in his modules:

We just rely on the internet to answer some questions regarding our lessons. There are things that we need to search on the internet.

Improvement of Technical Skills also emerged under this them because although radio is one of the simplest forms of information and communication technology device (Olakulehin, 2016), the students still believe that the use of other technological devices such as gadgets and the internet were still inevitable, and the use of these require a specific set of skills.

According to Participant 1:

I tried to learn more regarding technology and other gadgets. Maybe I can also attend seminars, so I won't need help every time something happens related to my devices.

Learner motivation was also one of the most prevailing issues or difficulties among the participants of this study. However, since the participants also seem to be aware of this challenge, they also take the initiative to work on this on an intrapersonal level. Participant 3 indicated that she would always change her study time to have lesser distractions while studying:

I always go back to the lessons every night... the internet connection is much more stable... there are fewer distractions around.

Participant 15 also cited that he had to constantly remind him to improve his study habits:

I remind myself to always check and study the specific lessons even after listening to RBI discussions... We need to work extra diligently...

Participant 5 also acknowledged that time management was both a challenge and a solution:

I think I just really need to manage my time for me to catch up with the lessons.

During the interview, the students also shared that one of their solutions to the challenges on communication was to interact with Co-learners and Teachers as much as they can. Participant 6 mentioned that although it was difficult, he still finds time to communicate with his teachers:

Although some teachers are difficult to contact, I still try to send them messages to ask my questions. There are parts of the lesson that we cannot study alone.

On the other hand, Participants 9 and 10 both ask the help of their other classmates who were able to fully understand their lessons. Participant 9 shared:

I just communicate with my classmates and ask them about the discussed topics or activities. Sometimes, I also understand it better when it was explained by my classmate.

Participant 10 also emphasized the help of her classmates in dealing with the challenges:

My classmates always help me whenever I have questions or when I'm having a hard time with a specific topic

Another learning technique that the students shared was the Change of Learning Environment. Two students explained that changing their learning environment can counter the challenges they have in optimizing the learning modality. Participant 11 mentioned:

Look for a place that is both quiet and has a stable internet connection or radio reception.

Participant 14 shared the same technique:

You must look for a place where the internet connection and radio reception are stable. However, most of the time, there isn't. I think it is something that we cannot control.

Theme 3: Learning Advantages

The Senior High School Students who participated in this study also mentioned the learning advantages they perceived in the use of RBI. The coded Learning Advantages that emerged in the interviews include Comprehensibility and Clarity of Instruction, Intrapersonal Motivation, Learner to Teacher Collaboration, Convenience, and Cost.

The first learning advantage that the researcher repeatedly obtained interviews was the Comprehensibility and Clarity of the Instructions. Seven students agreed that RBI was an effective modality as it delivers topics that help students in their learning process. Participant 1 remarked:

Compared to when I'm only studying my modules alone, I understand the lessons better when I listen to discussions using RBI.

Participant 2 also agreed:

I can easily cope with our lessons with the help of this.

Participant 6 also shared the same experience when asked about the benefits of using RBI:

It becomes easier for me to understand the modules that I receive for each subject.

Meanwhile, Participant 8 mentioned that the RBI discussions are easy to understand:

Lessons are easy to understand using the RBI...

Furthermore, Participant 10 also elaborated that the lessons became easier because of the discussions delivered through RBI, also helping them learn more. Participant 10 explained:

It becomes easier to do the tasks and activities that are given to us because of using the RBI.

Participant 13 further supported this, saying that RBI allowed for clearer instructions:

RBI helps make me understand the things that I should do for our activities and tasks. It helps in clarifying instructions that are difficult to understand.

Intrapersonal Motivation was also seen to be another advantage to the use of RBI among the participating students. Two of the participants mentioned that RBI would encourage them to be motivated personally to do their tasks better. Participant 12 mentioned in her interview:

RBI encourages me to listen very carefully. Studying alone is boring...

Participant 15 agreed to this as well:

RBI discussions push me to read more so that I can focus on my academic performance.

Another learning advantage that the researchers identified was the potentiality of Learner Teacher collaboration. According to the students, the RBI paved a way for better learner-to-teacher collaboration, even the Distance Learning modality. According to Participant 2:

I can ask the teacher directly on the comment section of the posted FB Live discussion about the things that I didn't understand during the discussion.

Participant 7 also elaborated that learning became easier because of the facilitation of teachers:

RBI helped in making learning easier for me because I can communicate with the teachers who would always explain our lessons and activities that we need to do.

Participant 11 also expressed how helpful it was to continuously communicate with her teachers:

Using the RBI, teachers can now communicate with us and teach us the lessons that we are struggling to understand. It is a great help for us students.

According to Participant 14 as well, the activities were much clearer because of the involvement of teachers in the discussions:

Now that we already have teachers who explain them to us, it is much easier and better.

The Senior High School students who were subjects of the study also mentioned the Convenience of the RBI learning modality. Four students agreed that the convenience of the RBI learning modality was one of its learning advantages. Participant 9 cited:

I like RBI because it helps me learn anywhere... even when I'm just at home.

Participant 14 also agreed in this learning advantage:

The use of RBI is very convenient. I think it is nice that learning continues even if I am home because of the help of RBI.

Meanwhile, Participant 3 also included the Facebook Live versions of the RBI discussions:

It is nice because I can always go back to the lessons that we already had... I can just go back to the discussions for clarifications.

One participating student also included the Cost to use RBI in the learning system as an advantage. According to Participant 8:

One learning advantage is that it's free. Most of us already have radios or internet connections at home, so there is no need for additional learning costs anymore.

Theme 4: Limitations of RBI

The fourth theme that the researchers determined in the studywas the perceived limitations of RBI. The researchers based the categories under this theme on the works of Marcial et al. (2020) regarding the prevailing barriers that both educators and students from various institutions all over the country perceive. The barriers or limitations that prevailed in the interviews include *Academic Skills*, *Learner Motivation*, *Time and Support for Studies*, *Cost and Access*, and *Technical Problems*.

The first category that emerged from the study was the requisite Academic Skills that are essential to RBI. Marcial et al. (2020) defined Academic Skills as a barrier that involves "language, writing, reading, communication, typing and confidence" that are fundamental to using the RBI learning modality. Participant 6 shared that he lacked the basic skills for the learning system:

I don't have enough knowledge or idea about the use of RBI... It's really difficult for me to catch up sometimes.

Under the Learner Motivation category, Marcial et al. (2020) determined barriers that lie on interpersonal issues of the learners. These barriers include learning habits, personal motivation, overall responsibility, and other intrinsic factors. 2 of the 15 informants mentioned this category as a limitation to the use and overall success of RBI among learners. Participant 5 remarked:

The advantages of RBI were only for those who choose to utilize and optimize it.

Participant 11 shared the same opinion:

For me, RBI has a positive impact overall... However, it is still up to us if we will use this for better academic performance.

Time and Support for Studies is also a category that occurred to the majority of the participating students.7 out of 15 informants mentioned that issues involving time constraints and overall learning atmosphere were perceived to be limitations of this learning modality. According to Participant 4:

...It's difficult to find the time to listen to the discussions. We already have so much to do.

Participant 6 also mentioned that RBI affected how he managed to do all his school workload:

The only limitation for me is that RBI is very time-consuming. Sometimes, there are activities or assignments that I already miss to do because of a lack of time.

Apart from the time needed to utilize RBI, Participant 9 also shared that RBI discussions were too brief that they would not be able to cover most of the lessons needed for their modules:

...30 minutes of discussion using RBI does not cover all the lessons or topics that we need to cover to help us in answering our modules... we will still be forced to learn the rest of the lessons on our own, which we still do even without the RBI discussions.

Meanwhile, Participant 12 mentioned both time constraints and learning environment:

I think what limits me to use RBI properly is time and the noisy surroundings.

Participant 7also mentioned not having a working environment that is not conducive to learning:

It is really difficult to focus on studying at home, especially because of our location.

Cost and Access are other limitations that were determined during this study. The majority of the participating students mentioned that cost and access were a perceived limitation for the effective and advantageous use of RBI. Participant 4 cited:

Some of us in the batch does not have some of the needed technology or devices... Learning modes like this are dependent on technology.

Participant 9 also mentioned that the lack of resources was a limitation to the use of RBI:

I think the lack of resources (needed for RBI) is also a limitation.

Participant 11 also said in the interview:

For me, the limitation is the equipment needed.

Access to a stable internet connection was also mentioned. Participant 3 shared in the interview:

Wi-Fi connection is important to RBI also. It's not all the time that we can listen to the sessions on the radio

Participant 7 also mentioned internet connection as one of the limitations of RBI:

Internet connection is also a factor, I think. Not all of our focus on RBI alone.

It is the same opinion as with Participants 8 and 15. Meanwhile, 10 also included bad radio reception as a limitation: According to her:

Maybe, it's the inability to access a good internet connection or radio reception.

The majority of the Senior High School students who participated in the study shared that in their perspective, one of the biggest limitations of RBI was the Technical Problems or issues. Technical problems include issues such as the lack of efficient and consistent platforms and technical assistance and skills.

According to Participant 1:

Sometimes, when the internet or the reception acts up, we don't know what else to do.

Participants 12 and 14 also mentioned this limitation in their interviews. Participant 14 said:

Sometimes, the signal or reception is fluctuating... if the signal is unstable, there will be a lot of parts that you will be missing.

Meanwhile, Participant 2 also included power interruptions as a hindrance in using RBI:

Power interruptions are one of the hindrances. In our area, power interruptions or outages are rampant. Every time it happens, we really cannot do anything anymore.

Theme 5: Perceived Effects on Academic Performances

The fifth theme that emerged in the course of this study was the perceived effects of RBI on the students' academic performances. This theme does not include any quantitative data on the actual effects of the learning modality on the academic performance of the students, rather, the qualitative data only expresses the lived experiences of the participants of this study.

All the 15 Senior High School students who participated in this study expressed that they perceived positive effects to their academic performances after using the RBI learning modality, while one explained that there were both positive and impacts brought about using RBI.

Participants 1, 2, and 12 all shared the same reason why they believed that RBI had a positive impact on their academic performance. Participant 1 mentioned:

It's always a positive impact because it helps me to easily understand the lesson.

Participant 2 also agreed:

It affects my academic performance positively because now, I can easily understand the lesson.

Participant 12 also had the same comment:

I can now easily understand the lessons compared to before, so I think, it has positive effects on my performance.

The perceived positive effects of the RBI learning modality in the learning system were also rooted in the involvement of teachers in the lesson discussions.Participant 3 commented:

Now that we already have teachers who discuss the topics, it has become easier. So, I think it only has a positive impact on me.

Participant 11 also thought of the same reasons why RBI posed positive impacts to her studies:

It only has a positive impact because the teachers always do their best to share the knowledge that they have with their students. I think learning is easier this way.

Meanwhile, Participant 7 explained that the perceived positive impacts were because of the overall experience in using RBI. He remarked:

RBI has positive effects on my studies. Compared with the learning modality that we used to have... RBI is now better because we already have teachers.

On the other hand, Participant 14 perceived positive effects because RBI offered clearer instructions to the learning activities they had:

It has positive effects because through it, I can clearly and easily understand what we need to do in our tasks and activities assigned to us.

Only Participant 9 also mentioned the negative effects of RBI on her academic 9 performance. In the interview, Participant 9 said:

...It also has a lot of negative effects and one of those is that it can never cover everything that is in our module. Most of the time, we still need to study on our own.

Conclusions:-

Based on the findings of the study, the lived experiences of Senior High School students in the Division of Province of Tarlac in using RBI can be divided into five themes: 1) Learning Difficulties, 2) Techniques and Learning Methods to Overcome Learning Difficulties, 3) Learning Advantages Experienced in Using RBI, 4) Perceived Limitations of RBI

The learning difficulties of the participating students include *technological difficulties* like radio reception, connectivity, lack of equipment, and lack of technical skills, *institutional difficulties* that covered the overall learning system and including the utilization of learning materials, communication, and other learning methods and techniques, *individual difficulties* that cover study habits and time management difficulties, and *domestic difficulties* that refer to the overall learning environment.

The students also developed techniques and other learning methods to overcome the learning difficulties posed by RBI. These include the *use of online alternatives* like FB videos and online references, *improvement of technical skills* needed to optimize RBI, *learner motivation* as changing of study habits, *interaction with co-learners and teachers* through sending of questions to teachers, and learning collaborations with co-learners, and *change of learning environment*.

RBI also offered Learning Advantages to the students. The advantages that the students mentioned include comprehensibility and clarity of instruction using RBI, intrapersonal motivation encouraged in using RBI, the potentiality of leaner to teacher collaboration, convenience, and cost.

The students also identified some of their perceived limitations in using RBI. The identified limitations include academic skills needed to effectively use RBI, learner motivation that covers learning habits and overall responsibility, time and support for studies like time constraints and overall learning atmosphere, cost and access to devices and other needed resources, and technical problems such as lack of efficient and consistent platforms, technical assistance, and skills.

Finally, the study also reveals that students who were already exposed to RBI as a learning modality perceived positive results or effects in their academic performances.

References:-

- 1. An Introduction to Codes and Coding. Retrieved April 28, 2021, from https://www.sagepub.com/sites/default/files/upm-binaries/24614 01 Saldana Ch 01.pdf
- Baclig, C. (2021). Several NCR Hospitals Declare Full Capacity for COVID-19 Cases. INQUIRER.net, March 2021. Retrieved April 22, 2021 from https://newsinfo.inquirer.net/1409997/several-hospitals-in-metro-manila-declare-full-capacity-for-covid-19-cases
- 3. Barrow, D. (2017). A Phenomenological Study of the Lived Experiences of Parents of Young Children
 Autism Receiving Special Education Services. Dissertations and Theses. Paper 4035. Doi:
 https://doi.org/10/15760/etd.5919. Retrieved April 15, 2021 from
 https://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?article=5044&context=open_acce ss_etds
- 4. Baticulon, R., Alberto, N., Baron, M., Mabulay, R., Rizada, L., Sy, J., Tiu, C., Clarion, C., Reyes, J. (2020). Barriers to Online Learning in the Time of COVID-19: A National Survey of Medical Students in the Philippines. Retrieved April 28, 2021, from https://www.medrxiv.org/content/10.1101/2020.07.16.20155747v1.full.pdf
- 5. Bernardo, J. (2020). DepEd Says to Address Challenges in Distance Learning, ABS-CBN News October 2020. Retrieved April 10, 2021, from https://news.abs-challenges-in-distance-learning
- Cahapay, M. (2020). Stranded College Students amid Corona Virus Disease 2019 Pandemic: An Existential Phenomenology. Journal of Loss and Trauma, 25(6-7), pp. 589-604. Doi: 10.1080/15325024.2020.1770955. Retrieved April 15, 2021, from https://www.tandfonline.com/doi/full/10.1080/15325024.2020.1770955
- 7. Caroro, R., Jomuad, M., Lumasag, J. (2013). Effectiveness of Online Learning System as a Supplemental Pedagogical Tool. Multidisciplinary Studies, 2(1), pp. 129-142. Retrieved April 19, 2021, from https://www.multidisciplinaryjournal.com/pdf/Effectiveness.pdf
- 8. Carroll, H., Stannard, L., Finder, J. (2020) COVID-19: Interactive Radio & Audio Instruction (IRI) Implementation Guidance. Save the Children 2020. Retrieved April 19, 2021 from https://resourcecentre.savethechildren.net/node/17890/pdf/learn_covid-19 tool interactive radio and audio instruction implementation guidance.pdf
- 9. Carvalho, A., Lopes, M., dos Santos, R. (nd). Distance Education and its Different Forms of Learning New Learners? Retrieved April 11, 2021 from https://www.researchgate.net/publication/266463140_Distance_Education_and_its_Different_Forms_of_Learning_-_New_Learners
- 10. Chan, N., Gleaves, A., Walker, C. (2015). An Exploration of Students' Lived Experience of Learning with Smartphones Using Hermeneutic Phenomenology. Computers & Education, 82, pp. 96-106. Retrieved April 15, 2021 from https://www.researchgate.net/publication/272392176_An_exploration_of_students'_lived _experiences_of_using_smartphones_in_diverse_learning_contexts_using_a_hermeneutic phenomenological approach
- 11. Cho, M. & Byun, M. (2017). Nonnative English-Speaking Students' Lived Learning Experiences with MOOCs in a Regular College Classroom. International Review of Research in Open and Distributed Learning, 18(5), pp. 173-190. Retrieved April 24, 2021, from https://www.mendeley.com/catalogue/84a240c0-869b-3a8f-ad8a-cfb8255e2f0d/
- 12. Dangle, Y. &Sumaoang, J. (2020). The Implementation of Modular Distance Learning in the Philippine Secondary Public Schools. 3rd International Conference on Advanced Research in Teaching and Education. Retrieved April 21, 2021, from https://www.dpublication.com/wp-content/uploads/2020/11/27-427.pdf
- 13. Department of Education (2020). Briones, Education Ministers Unite to Ensure Learning Continuity Amid COVID-19, June 2020.Retrieved April 13, 2021 from https://www.deped.gov.ph/2020/06/24/briones-education-ministers-unite-to-ensure-learning-continuity-amid-covid-19/
- 14. Department of Education (2020). Learning Opportunities Shall Be Available: The Basic Education Learning Continuity Plan in the Time of COVID-19. Retrieved April 19, 2021, from https://www.deped.gov.ph/wp-content/uploads/2020/07/DepEd_LCP_July3.pdf
- 15. Department of Education (2020). Official Statement, May 5, 2020. Retrieved April 22, 2021, from https://www.deped.gov.ph/2020/05/06/official-statement-2/

- 16. Department of Health (2021). DOH COVID-19 Tracker, April 2021. Retrieved April 22, 2021 from https://doh.gov.ph/covid19tracker
- 17. Department of Health (2021). DOH, NTF to Further Reduce Cases, Decongest Hospitals Through Enhanced Strategies and Vaccination. Retrieved April 22, 2021, from https://doh.gov.ph/press-release/DOH-NTF-TO-FURTHER-REDUCE-CASES- DECONGEST-HOSPITALS-THROUGH-ENHANCED-STRATEGIES-AND- VACCINATION
- 18. Department of Health (2021). DOH Updates on Novel Coronavirus Disease (COVID-19), April Retrieved April 22, 2021, from https://doh.gov.ph/2019-nCoV
- 19. EdTechHub (2020). Expert Consultation: Radio-Based Education in the Philippines, September Retrieved April 25, 2021 from https://docs.edtechhub.org/lib/YRC7UKWE/download/4CQXQRSY/McBurnie_2020_Expert% 20Consultation.pdf
- 20. Espino-Diaz, L., Fernandez-Caminero, G., Hernandez-Lloret, C., Gonzalez-Gonzalez, H., Alvarez-Castillo, J. (2020). Analyzing the Impact of COVID-19 on Education Professionals. Toward a Paradigm Shift: ICT and Neuroeducation as Binomial of Action. Retrieved April 28, 2021, from https://www.mdpi.com/2071-1050/12/14/5646/pdf
- Fidalgo, P., Thormann, J., Kulyk, O., Lencastre, J. (2020). Students' Perception on Distance Education: A Multinational Study. International Journal of Educational Technology in Higher Education, 17(18). Retrieved April 25, 2021 from https://educationaltechnologyjournal.springeropen.com/track/pdf/10.1186/s41239-020-00194-2.pdf
- 22. Francisco, C. & Barcelona, M. (2020). Effectiveness of an Online Classroom for Flexible Learning. International Journal of Academic Multidisciplinary Research, 4(8), pp. 100- 107. Retrieved April 5, 2021, from https://files.eric.ed.gov/fulltext/ED607990.pdf
- 23. Frechette, J., Bitzas, V., Aubry, M., Kilpatrick, K., Lavoie-Tremblay, M. (2020). Capturing Lived Experience: Methodological Considerations for Interpretive Phenomenological Inquiry. International Journal of Qualitative Methods, 19, pp. 1-12. Doi: 10.1177/1609406920907254. Retrieved June 15, 2021, from https://journals.sagepub.com/doi/full/10.1177/1609406920907254
- 24. Fuster, D. (2019). Qualitative Research: Hermeneutical Phenomenological Method. ProposPropósitos y Representaciones, 7(1), pp. 201-229. Doi: http://dx.doi.org/10.20511/pyr2019.v7n1.267. Retrieved May 16, 2021 from https://files.eric.ed.gov/fulltext/EJ1212514.pdf
- 25. Glazzard, J., Jindal-Snape, D., Stones, S. (2020). Transitions Into, and Through, Higher Education: The Lived Experiences of Students Who Identify as LGBTQ+. Front. Educ., 5(81). Doi: 10.3389/feduc.2020.00081. Retrieved April 15, 2021, from https://www.mendeley.com/catalogue/85d31b29-8d53-3902-8950-4a388b10d46e/
- 26. Gomez-Arizaga, M., Valdivia-Lefort, M., Castillo-Hermosilla, H., Hebert, T., Conejeros-Solar, M. (2020). Tales from Within: Gifted Students' Lived Experiences with Teaching Practices in Regular Classrooms. MDPI Education Sciences, 10(137), pp. 1-21. Doi: doi:10.3390/educsci10050137. Retrieved April 15, 2021, from https://www.mendeley.com/catalogue/9ba74b7d-4fff-3c79-a215-68b8a53f2399/
- 27. Holroyd, A. (2007). Interpretive Hermeneutic Phenomenology: Clarifying Understanding. Indo-Journal of Phenomenology, 7(2), pp. 1-12. Retrieved April 18, 2021, from https://www.tandfonline.com/doi/pdf/10.1080/20797222.2007.11433946
- 28. Honey, A., Boydell, K., Coniglio, F., Do, T., Dunn, L., Gill, K., Glover, H., Hines, M., Scanlan, J., Tooth, B. (2020). Lived Experience Research as a Resource for Recovery: A Mixed Methods Study. BMC Psychiatry, 20(456), pp. 2-13. Doi: https://doi.org/10.1186/s12888-020-02861-0. Retrieved April 15, 2021, from https://bmcpsychiatry.biomedcentral.com/articles/10.1186/s12888-020-02861-0
- Kılınç, A., Arslan, K., Polat, M. (2020). Studying Abroad: A Phenomenological Study of Lived Experiences of International Students in Turkey. Journal of International Students, 10(4), pp. 853-871. Doi: 10.32674/jis.v10i4.1190. Retrieved April 15, 2021, from https://www.mendeley.com/catalogue/8c32ca01d943-3394-a834-d938b47a1d09/
- 30. King, F., Young, M., Drivere-Richmond, K., Schrader, P.G. (2014). Defining Distance Learning and Distance Education. Retrieved April 28, 2021 from https://www.researchgate.net/publication/228716418_Defining_distance_learning_and_d istance_education
- 31. Laverty, S. (2003). Hermeneutic Phenomenology and Phenomenology: A Comparison of Historical and Methodological Considerations. International Journal of Qualitative Methods, 2(3). Retrieved April 16, 2021, from https://sites.ualberta.ca/~iiqm/backissues/2_3final/pdf/laverty.pdf

- 32. Marcial, D., Caballero, R., Rendal, J., Patrimonio, G. (2015). "I Am Offline": Measuring Barriers to Open Online Learning in the Philippines. Information Technologies and Learning Tools 45(1). Retrieved April 29, 2021 from https://www.researchgate.net/publication/331470284_I_AM_OFFLINE_MEASURING_BARRIERS TO OPEN ONLINE LEARNING IN THE PHILIPPINES
- 33. Mayo, J. (2015). On-Campus and Online: The Lived Experiences of Students Enrolled in the Online Courses of a Major Research University. Retrieved April 15, 2021 from https://repositories.lib.utexas.edu/bitstream/handle/2152/31005/MAYO- DISSERTATION-2015.pdf?sequence=1&isAllowed=y
- 34. Mobo, F. & Sabado, G. (2019). An Assessment of the Effectiveness of E-learning in AMA Olongapo Campus. Oriental Journal of Computer Science and Technology, 12(3), pp. 99- 105. Retrieved April 9, 2021 from https://www.researchgate.net/publication/336277449_An_Assessment_of_the_Effectiveness_of_E-Learning_in_AMA_Olongapo_Campus
- 35. Montemayor, M. (2020). Education Goes on Amid COVID-19 Thru DepEd's Continuity Plan. Philippine News Agency, December 2020. Retrieved April 14, 2021, from https://www.pna.gov.ph/articles/1126058
- 36. Neubauer, B., Witkop, C., Varpio, L. (2019). How Phenomenology Can Help Us Learn from the Experiences of Others. Perspect Med Educ, 8, pp.90-97. Doi: https://doi.org/10.1007/s40037-019-0509-2. Retrieved June 15, 2021, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6468135/
- 37. Olakulehin, F. (2016). Impact of Instructional Radio Delivery Mode on Academic Achievement of Distance Learning Students in Computer Science. US-China Educational Review B, 6(12), pp. 688-698. Doi: 10.17265/2161-6248/2016.012.002. Retrieved April 24, 2021 from https://www.researchgate.net/publication/317280160_Impact_of_Instructional_Radio_De livery_Mode_on_Academic_Achievement_of_Distance_Learning_Students'_in_Comput er_Science
- 38. Pena-Bandalaria, M. (2007). Impact of ICTs on Open and Distance Learning in a Developing Country Setting: The Philippine Experience. International Review of Research in Open and Distance Learning, 8(1). Retrieved April 12, 2021 from https://www.researchgate.net/publication/26455217_Impact_of_ICTs_on_Open_and_Distance_Learning-in-a-Developing-Country-Setting_The-Philippine.pdf
- 39. Reyes-Chua, E., Sibbaluca, B., Miranda, R., Palmario, G., Moreno, R., Solon, J. (2020). The Status of the Implementation of the E-Learning Classroom in Selected Higher Education Institutions in Region IV-A Amidst the COVID-19 Crisis. Journal of Critical Reviews, 7(11), pp. 253-358. Retrieved April 20, 2021, from http://www.jcreview.com/fulltext/197- 1590731776.pdf
- Shahbazian, A. (2015). An Introduction to Hermeneutic Phenomenology. Retrieved May 15, 2021 from https://www.researchgate.net/publication/312324059_An_Introduction_to_Hermene utic_Phenomenology/link/587a737608ae9a860fe893f8/download
- 41. Shamsei, F., Yaghmaei, S. Haghighi, M. (2020). Exploring the Lived Experiences of the Suicide Attempt Survivors: A Phenomenological Approach. International Journal of Qualitative Studies of Health and Well-being, 15(1). Doi: 10.1080/17482631.2020.1745478. Retrieved April 15, 2021, from https://www.tandfonline.com/doi/full/10.1080/17482631.2020.1745478
- 42. Simbulan, N. (2020). The Philippines COVID-19 and Its Impact on Higher Education in the Philippines. Retrieved April 19, 2021 from https://headfoundation.org/2020/06/04/covid-19-and-its-impact-on-higher-education-in-the-philippines/
- 43. The World Bank (2005). Improving Educational Quality through Interactive Radio Instruction: A Toolkit for Policymakers and Planners. Africa Region Human Development Working Paper Series No. 52. Retrieved April 29, 2021 from http://documents1.worldbank.org/curated/en/288791468035958279/pdf/357420AFRHD0 521lkit1nov10501PUBLIC1.pdf
- 44. Tria J. (2020). The COVID-19 Pandemic Through the Leans of Education in the Philippines: The New Normal. International Journal of Pedagogical Development and Lifelong Learning, 1(1). Retrieved April 19, 2021, from https://www.ijpdll.com/download/the-covid-19-pandemic-through-the-lens-of-education-in-the-philippines-the-new-normal-8311.pdf
- 45. United Nations (2020). Policy Brief: Education During COVID-19 and Beyond, August 2020. Retrieved April 26, 2021 from https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/08/sg_policy_brief_covid19_and_education_august_2020. pdf
- 46. United Nations Children's Fund, United Nations Development Programme, Economic Policy Research Institute (2020). The Impact of the COVID-19 Crisis on Households in the National Capital Region of the Philippines.

- Retrieved April 15, 2021 from https://www.unicef.org/philippines/media/2061/file/Finalreport:TheImpactoftheCOVID-19CrisisonHouseholdsintheNationalCapitalRegionofthePhilippines.pdf
- 47. United Nations Educational, Scientific and Cultural Organization (2020). Learning through Radio and Television in the Time of COVID-19. Retrieved April 19, 2021, from https://en.unesco.org/news/learning-through-radio-and-television-time-covid-19
- 48. World Bank Group Education (2020). The Impact of the COVID-19 Pandemic on Education Financing. Retrieved April 15, 2021, from https://pubdocs.worldbank.org/en/734541589314089887/Covid-and-Ed-Finance-final.pdf
- 49. World Health Organization (2020). Impact of COVID-19 on People's Livelihoods, Their Health and Our Food Systems (Joint Statements by ILO, FAO, IFAD, and WHO). Retrieved April 22, 2021 from https://www.who.int/news/item/13-10-2020-impact-of-covid-19-on-people's-livelihoods-their-health-and-our-food-systems
- 50. World Health Organization (2021). WHO Coronavirus (COVID-19) Dashboard, April 2021. Retrieved April 22, 2021, from https://covid19.who.int/
- 51. Zeeck, K. (2012). A Phenomenological Study of the Lived Experiences of Elementary Principals Involved in Dual-Career Relationships with Children. Retrieved April 15, 2021, from https://ir.stthomas.edu/cgi/viewcontent.cgi?article=1019&context=caps_ed_lead_docdiss.