Audio Podcast-Based Approach in Teaching Chemistry

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Abstract

The study aims to investigate the effectiveness of Audio Podcast-Based Learning Approach in teaching Chemistry in modular distance learning students at Binan Integrated National High School. The researcher developed an eight-episode audio podcast of the lessons based on the Self-Learning Modules. These are validated by seventy (70) science experts based on the validated survey questionnaire considering the following criterion: content, appropriateness, duration, voice modulation and technical aspects. There are a total of 140 students as respondents of the study.

A combination of product development and quasi-experimental method were used as the research design of the study. The mean and standard deviation was used to determine the level of acceptability of the Audio Podcast in terms of content, appropriateness, duration, voice modulation and technical aspects, and the learners' pre-test and post-test performance in Chemistry. Paired t-test was used to determine the significant differences between the pre-test and post-test scores. While on the qualitative part, thematic analysis of the students' perceptions was utilized.

Data analysis revealed that the level of acceptability of the Audio podcast in terms of content, appropriateness, duration, voice modulation and technical aspects resulted in a very high extent with the following mean: 4.79, 4.73, 4.64, 4.68 and 4.73 respectively. The level of learners' performance in Chemistry resulted a great improvement after the utilization of the Podcast based on pretest and post test scores from SD of 5.42 to 3.96. There is a significant difference in the level of learners' performance in Chemistry as evidenced by the difference between the comparison of mean and standard deviation. The study also found that the audio podcast demonstrated a positive views and response on the utilization based on the analysis of students' perceptions.

Based on the results and conclusion, the Audio Podcast-Based Approach developed is highly acceptable and effective in teaching Chemistry on the modular distance learning students at Binan Integrated National High School and created an impact on the students' learnings and it builds an effective connection with the subject matter and their subject teacher.

Keywords: podcast, audio, chemistry, approach

1. INTRODUCTION

The COVID-19 is still causing health crisis around the world, and it also affects and still affecting all realms of life, including the field of education. The sudden shift from the normal which is face to face instructions turns into virtual classroom and distance learning, wherein students don't have a direct interaction with their teachers as well as their classmates physically. Educators utilized different online platforms to reach out students, zoom and google meeting became the interim classroom, and parents were obliged to monitor the progress of their children at home, and students' interaction with their teachers are limited. The mandate of the World Health Organization (WHO) is to shift to different learning modalities due to the occurrence of COVID-19 outbreak.

When the Department of Education announced to start the academic year 2020-2021, the agency promised a strong preparation for the shift to online learning—including the development of Self Learning Materials or SLM's, the reduction of competencies based on students' lifelong needs or the Most Essential Learning Competencies (MELC), and the utilization of television and radio in teaching. Despite the agency's efforts, the outpourings of problems continued as the classes began.

The DepEd's Information Communication Technology Service Director Aida Yuvienco (2020) stated that out of all public schools in the country, 26% have access to internet. Because of widespread poverty, public schools will also struggle to keep up with online classes especially because according to the Department of Science and Technology (DOST), in terms of digital readiness globally, the country landed to 83rd among the 138 countries.

According to Ambayon (2020), modular distance learning modality requires a more operative and challenging instruction than the usual and traditional teaching approaches because students just stay at home, and they are obliged to learn in their own pace. Compared to the usual, where teachers can supervise the students' progress timely, as well as feedbacks, and comments are instantly given on the spot and students can asked questions while doing exercises and experiments which stimulates their minds and curiosity about the topics presented. Hence, this modality did help increases the learner-centered approach in learning, but various challenges arise to the teachers, students and even to parents as they served as para teachers for the time being.

The study centers on the utilization of Audio Podcast approach in teaching Chemistry in the Grade 8 modular distance learning students at Binan Integrated National High School for the whole Third Quarter of school year 2021-2022 where the researcher is currently teaching. The main objective of the study is to determine whether the above approach is an effective tool in teaching Chemistry despite the challenges brought by pandemic.

1.1 Objectives of the Study

The main purpose of this research is to determine the effectiveness of the utilization of audio podcast-based approach in teaching Chemistry during the third quarter of the Grade 8 students of Biñan Integrated National High School. Specifically, it will seek to answer the following questions:
1. What is the level of acceptability of the Audio Podcast-Based approach in terms of:
   a. contents;
   b. appropriateness;
   c. duration;
   d. voice modulation and;
   e. technical aspects?
2. What is the level of students' performance of the MDL Grade 8 students in terms of:
   a. pre-test scores;
   b. post test scores?
3. Is there a significant difference in the level of performance of students between the pretest and post-test?
4. What is the student's perception on the utilization of audio podcast-based approach?

2. METHODOLOGY

2.1 Research Design

The research utilized a mixed method particularly an embedded design. Embedded design is a mixed method design which a data set provides a supportive or a secondary role in a certain study which is based on a primary data type (Creswel, Plano Clark, et al.,2003).

The study also employed a Product Development in creating the Audio Podcast and a quasi-experimental method to determine effectiveness of Audio-Based Podcast approach in teaching Chemistry. Quasi-experimental is used to test the hypothesis and to establish and determine a cause-and-effect connections between the variables on the study.

The number one and two research questions are answerable by the quantitative data set gathered from the result of the study this is for the acceptability and effectiveness while the last one needs to know the personal experiences and perceptions of the respondents of the study; thus it requires a qualitative type of data.

2.2 Respondents of the Study

The researcher chosen respondents were from the Modular Distance Learning students of BINHS. The total number of respondents was 140 students from the Grade 8 students (S.Y. 2021-2022). All four sections handled by the researcher were under the experiment. Experimental group were treated with the Audio-Based Podcast approach while learning the topics in the third quarter instead of the traditional text-based instructions via messenger group chat or personal message.

2.3 Research Instrument

To get the appropriate data needed, the researcher used instruments to elicit and collect information in the form of a validated Questionnaire for Science Teachers for the acceptability of the Audio Podcast, a validated Pretest and Posttest for the collection of data for quantitative analysis and a one-item essay question for the qualitative part of the research.
A. Questionnaire on Acceptability
   The questionnaires composed of 8 questions on every criterion. The criteria used to test the acceptability of the developed audio podcast are the following: content, appropriateness, duration, voice modulation and technical aspects. With careful studies and readings, these are considered by the researchers vital to the production and effectiveness of an audio podcast. The questionnaire for the experts is validated first by the panel members and undergo Cronbach alpha test before the dissemination for the Science Teachers and some experts in the field of Broadcasting. The results of the reliability test are the following: 0.774 for content, 0.932 on appropriateness, 0.715 for duration, voice modulation is 0.961 and 0.973 on technical aspects
B. Pre-test and Post-Test
   The use of Pretest and Posttest were administered in all four sections as tools to measure the level of performance of learners. The test was subjected to reliability and validity test before the dissemination to the

respondents of the research. Then the test was administered via google forms and printed and test results were collected and analyzed to determine whether the Audio-Based Podcast approach has positive effect on their academic performance in the third quarter. During the experimental process, 140 respondents from four classes were taught by the same teacher with the same competencies mandated by the given curriculum based on the MELC-based or Most Essential Learning Competencies given by the Department of Education.

C. The Essay Part

The one-item essay question for the student respondents is given to twenty (20) students from the four sections under experimental after the 8-week long utilization of Audio Podcast-Based Approach in learning the topics in Chemistry. Responses are gathered, interpreted, and coded by the researcher and thematic analysis was done after careful readings. The question is:

"What is your perception/opinion or view on the use of Audio Podcast Based Approach in learning Chemistry especially in this time of pandemic? Does it help you a lot in understanding the lesson better? Why? Why not?"

2.4 Statistical Treatment

After data gathered, analysis was obtained through descriptive statistics, mean and standard deviation, paired t-test for comparing pretest and post-test scores, variance analysis for mean analysis to test the effectiveness of using Audio-Based Podcast learning approach and the performance of grade 8 students in Chemistry.

Descriptive statistics, mean and standard deviation were used for the acceptability of the Audio Podcast based form the result of gathered data   from the seventy (70) Science experts and Teacher Broadcasters in the education field. The scale below was used to determine rating of acceptability of Audio Podcast.

Ratings	Scale	Remarks	Verbal Interpretation
5	4.21 - 5.00	Strongly Accepted	Very High
4	3.41 - 4.20	Accepted	High
3	2.61 - 3.40	Moderately Accepted	Moderately High
2	1.81 - 2.60	Not Accepted	Low
1	1.00 - 1.80	Strongly Not Accepted	Very Low

3. RESULTS AND DISCUSSION

In this chapter, data gathered are laid out, collected, and discovered by the researcher as well as the interpretation and analysis of the needed data although out the research.

The presentation of the major findings follows the order of the questions enumerated in the statement of the objectives: the level of acceptability; the level of students' performance in terms of pre-test scores and post test scores; significant difference in the level of performance of students between the pretest and post-test; and the students' perception on the utilization of audio podcast-based approach in learning Chemistry.

From table 1 to table 5, it all presents the Acceptability level of the Audio Podcast-Based Approach in teaching Chemistry based on the following criteria: content, appropriateness, duration, voice modulation, and technical aspects.

Table 1 illustrates the level of acceptability of the audio podcast-based approach in terms of contents. Overall, the level of acceptability in terms of contents attained a mean score of 4.79 and a standard deviation of 0.42 and was interpreted as "Very High" among the science teacher respondents.

Table 1. Level of Acceptability of the Audio Podcast-Based Approach in terms of Contents

The Contents of the Audio Podcast-Base Approach…..	MEAN	SD	REMARKS
1. are based on the MELC and SLM.	4.80	0.40	Strongly Agree
2. are appropriately sequenced.	4.79	0.45	Strongly Agree
3. are appropriate for the intended learners.	4.83	0.38	Strongly Agree
4. are sufficient in quantity to cover the third quarter in science 8.	4.69	0.47	Strongly Agree
5. are factually corrected.	4.83	0.38	Strongly Agree
6. contribute to the achievement of the MELCs of the learning area and grade level which it is intended.	4.83	0.42	Strongly Agree

7. reinforce, enrich, lead to the mastery of the targeted MELC/s intended for the learning area and grade level.	4.77	0.42	Strongly Agree
8. are logically developed and organized throughout the material. (Activities are arranged from simple to complex).	4.76	0.46	Strongly Agree
Overall Mean = 4.79 **Standard Deviation = 0.42** **Verbal Interpretation = Very High**			

The results show that the content of the audio podcast is highly acceptable, and appropriate for the intended learners which are the Grade 8 Modular Distance Learning students. The results also indicates that the content of the audio podcast is valid and are all based on the mandated Most Essential Learning Competencies by the Department of Education. These results are coherent to Kruger, & Doherty, 2016 that the main goal of the production of audio podcast is to guarantee the achievement of the desired learning outcomes by the learners. Therefore, creating an Audio Podcast that is properly considers the content of the subject matter and the intended competencies is acceptable to be utilized in teaching.

Table 2 illustrates the level of acceptability of the audio-podcast based approach in terms of appropriateness. Generally, the level of acceptability in terms of appropriateness attained a mean score of 4.73 and a standard deviation of 0.46 and was verbal interpreted as "Very High" among the respondents.

Table 2. Level of Acceptability of the Audio Podcast-Based Approach in terms of Appropriateness

Appropriateness The Audio Podcasts episodes…..	MEAN	SD	REMARKS
1. contribute to the achievement of the learning area and grade level for which it is intended.	4.83	0.38	Strongly Agree
2. are suitable to the target learner's level of development, needs, and experience.	4.79	0.41	Strongly Agree
3. reinforce, enrich, and / or lead to the mastery of learning area and grade level.	4.79	0.41	Strongly Agree
4. have motivational strategies (e.g., overviews, advance organizers, puzzles, games, etc.) are provided based on the level of students.	4.66	0.51	Strongly Agree
5. use various teaching and learning strategies to meet individual differences/ learning styles.	4.71	0.46	Strongly Agree
6. develop higher cognitive skills (e.g., critical thinking skills, creativity, learning by doing, problem solving) and 21st century skills.	4.66	0.54	Strongly Agree
7. are logically developed and organized to facilitate based on students' understanding level.	4.73	0.45	Strongly Agree
8. enhance the development of desirable values and traits.	4.71	0.49	Strongly Agree
Overall Mean = 4.73 **Standard Deviation = 0.46** **Verbal Interpretation = Very High**			

The respondents strongly agree that the audio podcast-based approach is appropriate to the intended learners based on their needs, and all the intended skills that are needed for their development as well as the audio podcasts are logically developed and organized to facilitate based on students' understanding level.

These results are complements with Hughes, Costley & Lange (2018) study, that an effective tool would benefit much from the development based on the intended users and these are the students themselves, and what is intended to be acquired based on the needs of the learners despite the pandemic and based on the mandated Most Essential Learning Competencies of the Department of Education crafted because of the occurrence of the pandemic.

Table 3 illustrates the level of acceptability of the audio-podcast based approach in terms of duration. In general, the level of acceptability in terms of duration attained a mean score of 4.64 and a standard deviation of 0.53 and was verbally interpreted as "Very High" among the respondents.

Table 3. Level of Acceptability of the Audio Podcast-Based Approach in terms of Duration

Duration *The duration of the Audio Podcast episodes……*	MEAN	SD	REMARKS
1. were kept short enough to hold the listener's attention.	4.64	0.57	Strongly Agree
2. are long enough to cover the topic sufficiently.	4.49	0.58	Strongly Agree
3. is enough for the topic intended for a weekly basis.	4.66	0.51	Strongly Agree
4. have enough time for all the information to be covered on each episode	4.64	0.51	Strongly Agree
5. accurately split into multiple episodes for learners to understand the topics better.	4.67	0.47	Strongly Agree
6. information presented in the podcast was portrayed accurately which is required based on the MELC for every week	4.73	0.48	Strongly Agree
7. used consistently and precisely for the benefit of the intended audience.	4.67	0.50	Strongly Agree
8. have no dull moments and wasted time. (It was catchy and clever. Short and concise to retain audience attention)	4.59	0.58	Strongly Agree
Overall Mean = 4.64 **Standard Deviation = 0.53** **Verbal Interpretation = Very High**			

The respondents strongly agreed that the audio podcast duration is good enough to sustain the learners needs based on the mandated Most Essential Learning Competencies for the Grade 8 level and to sustain the interest of the learners and to cover the topic on a weekly basis.

These results were coherent to Debney and Tanya Druce claims that "the longer a piece of information is, the more difficult it is to remember". And also, to Hung & Chen (2018) study, that short duration tools achieve better performance at the level of understanding and retention of information in the memory like how short videos are gaining popularity nowadays because of its simplicity, direct and short duration.

 This were supported by Hung & Chen (2018) study that a short duration podcast with content that well-explained creates more retention to the learners. Since the average duration if all the podcast file ranges from 8-10 minutes, it falls on the medium duration and thus, it shows that it is acceptable for the audio podcast enough to be used in learning Chemistry and catches the audience interest.

Likewise, the findings above adheres to the idea and findings of the study of Taylor et al., 2012) and Kidd (2012). It simply entails that there will be no overloaded of memory, the content trying to convey, or messages will be processed and stored to the listeners.

Table 4 illustrates the level of acceptability of the audio-podcast based approach in terms of voice modulation. Overall, the level of acceptability in terms of voice modulation attained a mean score of 4.68 and a standard deviation of 0.50 and was verbally interpreted as "Very High" among the respondents.

Table 4. Level of Acceptability of the Audio Podcast-Based Approach in terms of Voice Modulation

Voice Modulation *In the Audio Podcast episodes….*	MEAN	SD	REMARKS
1. the teacher's voice catches students' attention.	4.63	0.54	Strongly Agree
2. the voice is not too loud nor too soft enough for students to better understanding of all the topics presented.	4.70	0.49	Strongly Agree
3. proper modulation is concisely and accurately utilized within the podcast.	4.73	0.45	Strongly Agree
4. proper intonation is accurately used in all the episodes.	4.61	0.52	Strongly Agree
5. the teacher's voice is pleasing to hear and not overly altered or distorted for audio listening purposes.	4.74	0.50	Strongly Agree
6. proper phrasing and commanding of voice are accurately used in the podcasts.	4.64	0.51	Strongly Agree
7. the episodes can be easily understood and comprehend because of proper pronunciation of all the words.	4.66	0.54	Strongly Agree

8. all episodes have proper modulation of voice intended not to overpower the listeners but for the audience to feel at ease while listening.	4.71	0.49	Strongly Agree

Overall Mean = 4.68
Standard Deviation = 0.50
Verbal Interpretation = Very High

Most of the respondents strongly agrees that the voice modulation used in the podcast by the teacher in discussing the Most of the respondents strongly agrees that the voice modulation used in the podcast by the teacher in discussing the topics all throughout the whole eight episodes or weeks presented. This simply implies that the teacher's voice is pleasing to hear and not overly altered or distorted for audio listening purposes and good enough to catch the attention of the listeners.

The finding was congruent to the study of Servilha and Costa (2013) like how students define what is pleasing to hear can keep their attention and they considered it a motivational one, thus, they can acquire more learnings to that kind of voice.

Thus, teachers that are planning to make an audio podcast needs to consider the proper pacing and intonation of the speaker's voice because these will contribute to the overall quality and effectiveness of the podcast. This was congruent to what Fernandez et al. (2015) said that researchers must consider the voice of the speaker in the podcast recording. He also points out that researchers must consider how the voice must be engaging and clear enough for the listeners.

Table 5 below illustrates the level of acceptability of the audio podcast-based approach in terms of technical aspect. Based on the table, the level of acceptability in terms of technical aspects attained a mean score of 4.73 and a standard deviation of 0.47 and was verbally interpreted as "Very High" among the respondents.

Table 5. Level of Acceptability of the Audio Podcast-Based Approach in terms of Technical Aspects

Technical Aspects The Audio Podcast episodes ……	MEAN	SD	REMARKS
1. instructions are clearly stated and can be easily followed and performed.	4.79	0.41	Strongly Agree
2. terms used in the podcast are simple and have been properly translated in language they are comfortable with.	4.76	0.43	Strongly Agree
3. proper usage of code switching is observed in the sessions.	4.71	0.46	Strongly Agree
4. are free from any disturbances upon recording.	4.81	0.39	Strongly Agree
5. are clear enough for better transmission of learnings.	4.77	0.42	Strongly Agree
6. background music is used accordingly.	4.61	0.60	Strongly Agree
7. proper volume is observed in all the sessions.	4.74	0.47	Strongly Agree
8, there is no dead air, glitching and unnecessary pause within the sessions.	4.66	0.51	Strongly Agree

Overall Mean = 4.73
Standard Deviation = 0.47
Verbal Interpretation = Very High

The respondents strongly agree that the technical aspect of the podcast is highly acceptable, and this results simply implies that the Audio Podcast used in teaching Chemistry was developed while considering the technicalities in order to create a clearer view and understanding on all the topics presented and for easier transmission of ideas and knowledge from the teacher to the learners and audible enough to sustain the students focus.

These results compliments with the work of Jamshidi & Navehebraim, (2013) about codeswitching. According to this study, students learned and understand the content if the teacher communicate in a familiar language thus, it promotes clear instructions. With this regards, simple words, but direct to the point discussions, easy to comprehend instructions, and integration of the language where learners are comfortable with plus the integration of background music etc.

Students' Performance in terms of Pre-Test and Posttest Scores

Table 6 below shows the students' performance in terms of Pre-Test and Post-test scores. Based on the table, you can see the comparison of both percentage of students score in pretest and posttest range as well as the mean and standard deviation.

Table 6. Level of Students' Performance of the MDL Grade 8 Students in terms of Pre-Test and Posttest Scores

Range	Pre-Test		Post-test.		Remarks
	Frequency	Percentage	Frequency	Percentage	
41 – 50	0	0.00	8	5.71	Outstanding
31 – 40	1	0.71	89	63.57	Very Satisfactory
21- 30	68	48.57	43	30.71	Satisfactory
11- 20	61	43.57	0	0.00	Fairly Satisfactory
0 – 10	10	7.14	0	0.00	Did Not Meet Expectations
Total	140	100.00	140	100.00	
Overall Mean	19.83		33.09		
Standard Deviation	5.42		3.96		
Verbal Interpretation	Fairly Satisfactory		Very Satisfactory		

As per the pre-test, out of one hundred forty (140) students, sixty-eight (68) were able to score between 21 and 30 which was satisfactory. This was followed in frequency by those who had performed on a fairly satisfactory level, with sixty-one (61) students or 43.57% of the population performing as such. The least with 0.71% or one (1) student was able to score between 31 and 40 which was very satisfactory.

As per the summative test, out of one hundred forty (140) students, eighty-nine (89) or 63.57% of the total population were able to score between 31 to 40 which was very satisfactory. This is seconded by those who scored 21 to 30 with forty-three (43) students or 30.71% of the population performing on a satisfactory level. While the remaining eight (8) students were able to gain score between 41 and 50 which was outstanding.

Overall, as per the pre-test, the students' performance was fairly satisfactory with a mean score of 19.83 and a standard deviation of 5.42. This means that students are not yet acquainted and have no prior and enough knowledge regarding the topics for the third quarter which are all under Chemistry. Thus, the scores indicates that there is a need for them to utilize the approach and learn the required knowledge and skills for the third quarter.

As per the posttest, the students' performance was very satisfactory with a mean score of 33.09 and a standard deviation of 3.96. The results implies that the Audio Podcast-Based Approach is effective as how the Mean increases.

Based on the statistical result of the pre-test and post-test above, it simply implies that students were able to learn and adopt the lessons using the Audio Podcast resulting to higher number of students who got a score ranging from 21-50 based on the comparison of both frequency and percentage distribution in pretest and posttest.

While based on the least mastered items on both pre-test and post-test, these items fall under the "Difficult" questions and belong to the highest cognitive domain, "creating". Some also have slight confusions are the items that they need to identify which is a true statement and which is not. These mostly falls under the "analyzing" and "evaluating" domain. But still the results of both mean scores and standard deviation, the results elevated from "fairly satisfactory" to "very satisfactory".

These results of the pretest and post-test scores appeared to be in harmony with research conducted by Alvarez-Bell 2014, Ruddick (2012), Tune, Sturek, and Basile (2013), in which students in sections with integration of podcasting outperformed the traditional sections after administering exam.

Difference in the Level of Performance between the Pre-Test and Posttest

Table 7 below shows the difference in the Level of Performance of the students Between the Pre-Test and Posttest and the result of the analysis based on the statistical treatment used.

Difference in the Level of Performance between the Pre-Test and Posttest

Table 7 below shows the difference in the Level of Performance of the students Between the Pre-Test and Posttest and the result of the analysis based on the statistical treatment used.

Table 7. Significant Difference in the Level of Performance of the Students Between the Pre-Test and Posttest

Test	Mean	t statistic	t critical	p-value	Analysis
Pre-Test	19.823	-30.005	1.977	0.000	Significant
Posttest	33.086				

There is an observed significant difference in the level of performance of the students between the pre-test and posttest based on the computed t-statistic of -30.005 which implies that the post test results are greater than the pre-test, also is greater than the critical t with a p-value that is less than the significance alpha 0.05.

From the findings above, we can infer that at 0.05 level of significance, the null hypothesis, "There is no significant difference between the pretest and post test scores after the utilization of Audio Podcast-Based Learning Approach in teaching Chemistry of the Grade 8 students of Biñan Integrated National High School" is rejected.

Based also on the statistical data which stated that "the post test results are greater than the pre-test", indicates the effectiveness of the Audio Podcast-based Approach in teaching Chemistry in modular students of the Grade 8.

Since the existence of pandemic hinders the students to have a direct interaction with their teachers to facilitate learning but based on the data gathered and the result of pretest and post-test, it shows the effectiveness of the Audio Podcast-Based Approach in teaching Chemistry to the modular distance learning students of Binan Integrated National High School.

Based on the thematic analysis of the respondents' answers to the question: "What is your perception/opinion or views on the use of Audio Podcast Based Approach in learning Chemistry especially in this time of pandemic? Does it help you a lot in understanding the lesson better? Why? Why not?", yielded to a total number of three (3) main themes with respect to their podcast utilization experience, and these are: increase understanding, helpful in answering the activities, and it builds a connection between teacher and students. The following are the responses of the students, and the researcher utilized a semi-verbatim transcription of these responses.

Theme 1: Audio Podcasts Increase Understanding

Based on the answers of the student respondents, some of them said that the audio podcast used in learning chemistry increases their understanding of the topics presented by the 8-week podcast.

*"Audio Podc*asts help me to understand the lesson about chemistry better and they help me a lot to understand my *activities."*

The audio podcast helps me in understanding the lesson in chemistry because it can answer all the questions I have in mind about the lesson, and it explains the lesson clearly.

Some respondents even stated how the Audio Podcast helps them not to lose their interest in the subject because of the lack of interaction on both teachers and students.

"It helps a lot because some of the lesson i don't understand when i am answering it but the audio podcast helps me *to understand the module and also I'm really interested in science so it help me a lot in answering the module"*

Some even stated how the audio podcast made the subject easier to understand because of the clear and direct to the point explanation of their teacher.

*It also makes it easier for me to understand each lesson, and there's no need to search about the topic*s or ask clarifications from my teacher coz the audio file explains it in an easier manner.

The following statements is coherent to the study of Mashru (2017), where same findings were explicitly stated by the student respondents on how the podcast serves as helpful and very useful in the process of learning the topics presented by their teacher as speaker.

Theme 2: Audio Podcast as a "Helpful Tool"

Respondents generally described that listening to the Audio Podcasts was very helpful in answering the activities on the module.

Audio file given by my teacher helps me a lot in answering the tasks on the module and it gives me ideas on how to comprehend and answer the different activities on the module.

Some respondents felt that they can easily answer the activities because the instructions given on the audio file is clear enough for their understanding.

The audio file helps me because it makes me answer the activities easier and faster and I learn the lesson better.

It is easier to understand the instructions given to you and just by listening to the audio, you can understand better or understand what to do.

I can finally answer my module without the help of google.

The abovementioned supports the study of Kay and Kletskin (2012), as these students statements point out that the utilization of podcasts in learning was useful, easy to follow, and a helpful and effective tool for learning. Also in coherent toPalenque (2016) revealed that podcasts developed a self-regulated learning among the listeners.

Theme 3: Audio Podcast as "Connection".

Participants also reported building a connection between their teacher while listening and learning through the audio file sent by their subject teacher.

With the help of it, I'm not hesitant to answer because I feel like I'm in school because I hear my teacher's voice.

It gave me the impression that I was in a face-to-face class where I could hear my subject teacher's discussion.

This was reflected on their answer where they have built a personal familiarity as well as created a sense of acquaintance and assurance and built a healthy and comfortable environment while listening to their teacher's voice explaining the lesson.

It's difficult to study chemistry when you have to read it alone and have no one to explain it to you. During this time, many students, particularly slow learners, including myself, benefit from an audio podcast-based approach.

The audio file is essential in this time of Pandemic because in this crisis school was closed and students can't go there to study so the Audio file instruction was one the way to communicate between students and teachers.
With the audio podcast, I can fi*nally answer my module without the help of google, thank you ma'am for your effort. Your voice helps a lot."*
Based on the following findings, the audio podcast-based approach established an impact on the teaching and learning process despite the challenge of the new normal. As reflected to the student's responses, the podcast made by the researcher as their subject teacher, builds a feeling of presence and connection even though the teacher is not physically present.

These findings fully support the idea of the study of Al Sheef (2019) as the students developed a positive attitude towards the utilization of audio podcasting. It also spines the study of McHugh (2016), that the utilization of audio podcast influenced the respondents' emotional aspects in the learning process by conveying a connection with the teacher. Since this podcast build connection between the teacher and the students, for a fact that the speaker himself is their subject teacher.

4. CONCLUSION AND RECOMMENDATION

Based on the findings of the study, the following conclusions were drawn: the level of acceptability of the Audio Podcast-Based Approach in terms of content, appropriateness, duration, voice modulation and technical aspects have a weighted mean that were all interpreted as "very high" as rated by the science teachers as respondents. Moreover, the test difference between the pretest and posttest of the learners as respondents resulted that there is a significant difference in the level of performance in Chemistry. In addition, the respondents also developed positive attitudes on the utilization of the Audio Podcast Approach in learning the subject matter. Hence, these results conclude that the Audio Podcast-Based Approach developed is effective in teaching the Chemistry.

Therefore, the null hypothesis, "There is no significant difference between the pretest and post test scores after the utilization of Audio Podcast-Based Learning Approach in teaching Chemistry of the Grade 8 students of Biñan Integrated National High School" is rejected. Thus, there is a significant difference between the pretest and post test scores, and it denotes that the Audio Podcast-Based Approach is an effective tool in teaching Chemistry.

Recommendations
Based on the findings and conclusions, the following recommendations are made:
1. The Audio Podcast may be used by science and non-science teacher to deliver their lessons.
2. School Heads may implement or suggest the use of podcast as mode of instruction in delivering the teachers lesson to MDL sections.
3. Science teachers can maximize the use of this podcast approach when giving instructions and other information to their students.
4. The proposed intervention plan may be adopted to provide base line information for policy formulation on the training and development of their faculty/teacher.

5. Parallel study may be conducted to discover other variables or areas which are not covered with the framework of the study.

5. ACKNOWLEDGMENTS

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