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The Effects of Podcast on the Academic Performance in Science of Grade 10 Learners

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ABSTRACT

The aim of this study was to develop a Science Podcast to see how successful it was in improving academic performance among Grade 10 students. The descriptive-correlational approach was used, as well as the true experimental method, which used a pre-test post-test control group configuration. The learners and subject area of the analysis were chosen using purposive sampling. The study subjects were divided into two groups of forty (40) Grade 10 students, twenty (20) males and twenty (20) females. Ten (10) DepEd Quezon Science teachers were also used as respondents to assess the podcast's acceptability. The Acceptability of the Developed Science Podcast for Grade 10 students was determined to: Objective with a mean of 4.50, indicating that it is Highly Acceptable. In descending order, Assessment (4.34); Time-frame (4.34); Content (4.30); and Language Level (4.25) were all interpreted as Very Much Acceptable with an overall weighted mean of 4.35. Results have shown that the experimental group's academic success has increased dramatically as a result of their use of Science Podcast. As a result, Science Podcast can help teachers and students in motivating, associating ideas, and summarizing lessons.

INTRODUCTION

Podcasts are being utilized nowadays in the different fields especially in teaching. Numerous researches have proven its significance and promise of supporting the teaching and learning, either in pedagogical or in conceptual processes of transforming knowledge into practice. As the implementation of K to 12 Curriculum, DepEd pursues relevant teaching materials, approaches and strategies that can provide students the concepts and competencies in a more interesting way.

Podcast is a significant resource which teachers used to teach and learn a language. It is an alternative method of learning which helped improve listening skills. Most of producers of podcasts are educators who use this technology to communicate with their students outside the traditional class. Podcasting is also a tool which allows teachers to share their ideas and suggestions in order to improve their method of teaching. It can be used in many different educational settings, including lecture, individual or small group inquiry activities, homework, and laboratory activities. It was primarily aimed to help students learn better in abstract or higher sciences. Hundreds of researches available showed that it is a highly effective learning tool and therefore can enhance a well-designed curriculum and the efforts of a good teacher, but of course, they cannot replace them.

Using of multimedia technology improves students understanding and transfer of information. By applying the said technology as a teaching strategy and technique, teachers can use this since they are expected to cater relevant services that can be accounted to realize the realms of the K to 12 Curriculum. The integration of podcast technology in the learning process is very

important since worked with the provision of the 1987 Philippine Constitution, Article XIV, Section 10. This also supported the findings of the study of Webb, E., and Cavanagh, G. (2008) that podcasts are increasingly being used to support learning and teaching in Higher Education Institutions, both within the curriculum and as outward facing information and marketing tools. Podcasts are currently available in different formats including pure audio, enhanced audio and video podcasts. YouTube as its leading service provider gives different topical subject matter where students can use this in their presentation such as for their report. In accordance with this, numerous researches showed and revealed its effectiveness to students' learning, and some posed comparisons of the effects of different podcast formats and the effects and suitability of various range of platforms.

The essence of podcasting is the creation of audio and/or video content for an audience that wants to listen to what they want, when they want, where they want, and how they want. With students now more mobile than ever, the idea of being able to access information without being linked to a certain physical location is very attractive.

Computer aided instructions and other similar forms of technologies are quickly becoming accepted and highly perceived as effective educational tools nowadays. Relatively, as a new addition to the classroom teaching, science teachers should be trained in handling this powerful addition to our wide array of teaching technologies.

As our country embraced K to 12 Basic Education Curriculum, higher demands for better learning, better instruction and better academic performance of students arise. Although students are well trained on the

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curriculum competencies, most of them our students failed to develop abstraction of information and cannot consolidate and transfer previous taught information to the present lesson. Thus, podcasting holds great potential both as a teaching and learning tool. As a result, the podcasting phenomenon has attracted the attention of educators at all levels. This helped students into becoming better learners, especially after they were exposed to technology-aided instruction.

Utilizing relevant teaching strategies is very important to work in consonance with the Philippine Education for All (EFA) 2015, a vision and a holistic program of reforms that aimed at improving the quality of basic education for every Filipino by 2015. Improving student achievement is very important to generate positive outcomes specially to work with the provisions of the Schools First Initiative (SFI) of 2004 which is aimed to improve basic education outcomes through a broadly participated, popular movement featuring a wide variety of initiatives. This research study is in consonance with the Basic Education Sector Reform Agenda (BESRA), the policy reforms program that issued the National Competency- Based Teacher Standards (NCBTS).

The integration of the use of podcast in teaching have generated positive results on their Teacher Strengths and Needs Assessment (TSNA), a teacher assessment tool anchored on the overarching concept of teacher professional development. It was a formative tool that have encouraged teachers in taking personal responsibility for their own growth and professional advancement.

With the focus of this study, it helped the Department of Education in working with the Sustainable Development Goals (SDGs), the country's global target for the 2030 Agenda for Sustainable Development Quality Education. Under goal number 4, which aimed to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. It is aimed that by 2030 that all girls and boys can access to equitable and quality primary and secondary education leading to relevant and effective learning outcomes.

Hence, this study could help the Department of Education in attaining the Results Based Performance Management System (RPMS) which is a systematic approach for consistent and continuous work improvement. The same way teachers grade students and give them feedback to improve their performance, the RPMS gives all employees a means to gauge their performance and seek improvement. The RPMS results will guide the Department in providing training interventions to ensure continuous development. This is part of DepEd's commitment to provide quality education to our learners. Those discernments have challenged the researcher to discover the use of podcast as an experimental method and as a method in teaching Science to improve students' academic performance.

In this situation, the researcher opted to study the Effects of Podcast on the Academic Performance in Science of Grade 10 Students for the School Year 2017-

2018. This was based from the relevant findings of the studies conducted by Avila, (2016) on the Effectiveness of Frayer Model as Graphic Organizer in Science for Grade 8 students; Sarabando, (2014), about Learning with simulations: Contribution of computer simulations to students' learning of Physics Concepts; Glenberg et. Al, (2012), on Science SIMS and Games: Best Design Practices and Fave Flops, Perkins, (2013), about Blending Implicit Scaffolding and Games in Physics Interactive Technology (PHET), Interactive Simulations; and Rehn et. Al, (2013), about Tools for High tech tool use: A framework and heuristic for using interactive simulations. From this, by determining the effects of the use of Podcast in the Academic Performance in Science of Grade 10 Students, this study has conducted.

Statement of The Problem

This study assessed the Effects of Podcast on Academic Performance in Science of Grade 10 Students of Our Lady of Lourdes Academy, Tagakawayan, Quezon for School Year 2017-2018.

Specifically, it sought answers to the following questions:

1. What podcast program in Science can be developed to effectively facilitate the teaching of following topics:
 - 1.1. Coordinated Functions of Reproductive System,
 - 1.2. Endocrine and Nervous System, Heredity
 - 1.3. Biodiversity, and
 - 1.4. Evolution, and Ecosystem?
2. How acceptable is the developed Podcast in Science for the Grade 10 Students of Our Lady of Lourdes Academy in terms of:
 - 2.1. Objectives,
 - 2.2. Content,
 - 2.3. Language Level,
 - 2.4. Assessment, and
 - 2.5. Time Frame to the set of jurors?
3. How significant is the agreement on the rank orders of the juror's assessment on the acceptability of the Podcast?
4. What is the profile of the students' academic performance in Science 10 before and after their exposure to the utilization of the Podcast?
5. How significant is the improvement brought about by the use of the Podcast?
6. How significant is the difference between the post-test scores of the students who utilized the Podcast and those who were not exposed to the strategy?
7. What pointers can be formulated based from the findings of the study?

Scope and Delimitations

This study focused on the Effects of Using Podcast on Academic Performance in science of Grade 10 Students in Our Lady of Lourdes Academy (OLLA) for School Year 2017-2018. This study investigated the enhancement program in Science that can be conceptualized to effectively use of the Podcast specifically for the Third Grading Period Topics which includes the topics on Coordinated Functions of Reproductive, Endocrine and Nervous System; heredity, biodiversity, evolution and

ecosystem.

Likewise, it dealt with the acceptability of using podcast in teaching Science Grade 10 in terms of Objectives; Content; Language Level; Assessment, and Time-Frame to the set of Jurors.

The research subjects were the Grade 10 Students of OLLA taking up K to 12 BEC. They were the Grade 10 A and 10 B. These two research subjects were handled by the researcher himself in the said school year. The researcher conducted a Pre-test and Post-Test in both research groups to test the comparability of the two group of research subjects if the level of performance was the same.

The medium for the study was the Podcast in Science for Grade 10 Students. This was evaluated by the set of Jurors. Then, it was used by one group of research subject, the Grade 10B respectively. The researcher also considered looking into the students' performance after exposure to the Podcast.

After which a Post-test was conducted to the two respondents to test the significant improvement of the experimental variable using the Podcast.

This study was delimited only to the Grade 10 Students who took up K to 12 BEC for School Year 2017-2018. It was also delimited to Our Lady of Lourdes Academy, Tagkawayan, Quezon as the site of the study.

Significance of The Study

Developing effective strategies and innovative techniques in teaching Science helped address the needs of students. This further helped the schools in addressing the needs of science teachers and improved the academic performance of students using podcasting in science concepts. Furthermore, the result of this study has benefited the learners as direct beneficiaries of the present study, this can be a great help to them in gaining and understanding of concepts as well as to develop comprehension in scientific knowledge that are taught while dealing with Podcast in Science. Also, this will help teachers make learning easy and effective. They will facilitate learning using the Podcast in Science and guide the students in dealing with it. In addition, school administrator/ school heads will also be benefited by this study. This may serve as a medium of planning and developing more effective and efficient Science Teaching especially in Science 10 for the betterment of the students and furthermore, increasing the school's performance in the National Achievement Test. This will also benefit the curriculum writers as this serves as an opportunity for them to develop a curriculum that will anchor the needs for Podcast in Science subjects, particularly in Science 10. The Department of Education (DepEd) and the Commission on Higher Education (CHED) will also be benefited. This will help the students of the country develop their lifelong learning skills and help them become globally competitive individuals, particularly the important concepts in Science. This will also serve as new avenue for finding innovative ways in teaching. Moreover, future researchers as this serves as a new way to encourage other researchers to have a study

in Science, on how to make teaching more effective, for the learning to become easier and to fully understand the subject and developing podcasts as teaching materials in their respective subjects.

METHODOLOGY

This study utilized the descriptive-developmental-correlational method of research and the true experimental design utilizing pre-test post-test control group method of research. The descriptive-developmental-correlational method was used in the formulation and validation of the Podcast in Science for Grade 10 Students of Our Lady of Lourdes Academy to the set of jurors in terms of objectives, content, language level, assessment and time-frame and as well as their significance of agreement. This was also used to describe the significant difference of the performance of Grade 10 students on the Podcast. On the other hand, the experimental-pre-test-post-test-control-group design was used in determining the effectiveness of the Podcast on the academic performance in Science of the Grade 10 Students.

Sampling Technique

Purposive sampling was adopted in the choice of Our Lady of Lourdes Academy as the school under study while the research subjects were randomly chosen from the students of OLLA. This included two sections of the Grade 10, namely Grade 10A as the control group and Grade 10B as the experimental group of Third Grading Period, School Year 2017-2018. The two research subject groups were both handled by the researcher himself. The choice of them was based on the comparability of variables which included age, gender and their previous Grading period grades.

The Research Subjects and Respondents

In this study, ten (10) Science teachers from the Department of Education Division of Quezon were the respondents of the study. Students enrolled in Third Grading Period, School Year 2017-2018 of Our Lady of Lourdes Academy particularly Grade 10A as the Control Group and Grade 10B as the Experimental Group were the research subjects of the study. The research subject groups were composed of 60 Grade 10 students. Based from Table 1 and Figure 4, both research subjects have the same total number of 40 students or 50 % in percentage and gave a total of 80 students or 100 %. Both the experimental and the control groups, have 40 or 50% male and 50% female research subjects.

Respondents

The respondents of the study are discussed in Table 2. The respondents were the ten (10) Jurors who assessed the Podcast. They are Science Teachers in the Department of Education handling Grade 10 science subject.

Study Procedure and Time Budget Permit to Conduct Study

The study was conducted after the research instrument was checked and evaluated by the jurors and checked by the adviser and permitted by the Department of Education, Division of Quezon Superintendent and the school concerned, specifically Our Lady of Lourdes

Academy.

Administration of the Pre-Test

A fifty item Pre-Test and Post-Test were given to the respondents and were checked and tested for the comparability of the research subjects. There were 40 students from the control group and 40 students from the experimental group.

Data Processing

After the conduct of the post-test and the Rating Form for the students, it was checked, tallied, computed and analyzed.

Preparing the Manuscript

After the data processing, the thesis manuscript will be prepared, edited and finalized.

Acceptability of Science Podcast in terms of Objectives

The jurors average mean in terms of objective was 4.50

Table 1. Acceptability of Science Podcast in terms of Objectives

Objectives	Average		
	Mean	Int	Rank
The objectives are in line with the Philosophy, Vision, Mission and Goals of Dep. Ed	5.0	HA	1.5
They are based on the learning competencies stated in the K to 12 English Curriculum Guide.	3.9	VMA	10
They are brief, concise and can be accomplished within a period.	4.6	VMA	3.5
They are in accordance with the three domains of learning by Bloom.	4.3	VMA	8
They are clearly stated.	4.3	VMA	8
They are parallel to the target of the subject itself.	5.0	HA	1.5
Objectives indicates appropriate learning outcome	4.3	VMA	8
They are well defined and easy to achieve in a 1 hour period.	4.5	HA	5.5
Arranged in Chronological order	4.5	HA	5.5
Are connected to another objectives (spirally progressing)	4.6	VMA	3.5
Composite Mean	4.5	HA	

concepts that are needed by the Grade 10 Students. Contents helped them learn plenty things that is relevant for them to learn the spirally the prescribed competencies of K to 12 Sciences. Hence, making their performance improved and learn Grade 10 Science efficiently.

Table 2. Acceptability of Science Podcast in terms of Content

Content	Average		
	Mean	Int	Rank
The different activities are applicable for Grade 10 Students.	3.7	VMA	9.5
Contents are simple, concise, and provide an avenue for learning.	5.0	HA	1.5
Grade 10 Students will be familiar with basic concepts before proceeding to the next topic.	3.9	VMA	8
Prior Concepts will serve as additional inputs for the Grade 10 Students as they go on with higher Grade English	5.0	HA	1.5
Activities are needed by the students to understand concepts properly	4.5	HA	3
Exercises are in line with the level of comprehension.	3.7	VMA	9.5
Challenging to the students	4.0	VMA	6.5
Provide opportunities for instruction with learner	4.3	VMA	5
Questions can develop (HOTS)	4.0	VMA	6.5
Activities give opportunities to apply previous learned concepts each learning session.	4.4	VMA	4
Average	4.25	VMA	

verbally interpreted as Highly Acceptable. Objectives as used in this study were the goals of every lesson in the developed Podcast in Science for Grade 10 Students. Relating to the ratings of the ten Jurors who evaluated the Podcast, the researcher concluded that the Objectives of the lessons were Highly Acceptable which means that they agreed that the researcher appropriately followed the three Domains of Bloom's Taxonomy. This includes the Cognitive, Affective and Psychomotor domain which are consulted in framing and carefully setting the objectives in the Podcast. Therefore, the manifestation was extreme and very well in terms of objectives.

Acceptability of Podcast in terms of Content

The result implies that the Contents of the Podcasts for Grade 10 Students of Our Lady of Lourdes Academy contained information and concepts were very much accepted (4.25). The contents are well supplied with

Acceptability of Podcast in terms of Language Level

With composite mean of 4.3, the Language level as used in the utilization of science podcasts for Grade 10 students was evaluated by the ten Jurors and it was interpreted to be Very Much Acceptable. Instructions are clearly

stated and can be easily followed and performed. With this, Grade 10 students' performance was improved. And using the podcasts will make learning in Science 10 easier.

Acceptability of Podcast in terms of Assessment

With composite mean 4.34, the Jurors evaluation for the Assessment of the Podcast was interpreted Very Much Acceptable. This means that the questioning and assessment relevantly aid the students reasoning and

Table 3. Acceptability of Science Podcast in terms of Language

Language	Average		
	Mean	Int	Rank
Different terms in every session and activities are understandable by Grade 10 Students.	4.0	VMA	6
Instructions are clearly stated and can be easily followed and performed.	4.7	HA	4
Activities and terms are in line with the level of comprehension of the Grade 10 Students.	4.3	VMA	8
The terms can be understood by Grade 10 students even without asking the teachers/consulting dictionary.	4.0	VMA	6
Terms used in the podcasts are	4.5	HA	3
concise and simple	5.0	HA	1.5
Encourages students to ask higher order thinking skills	4.0	VMA	6
Develops students to think critically	3.5	VMA	10
Shows concern for individual differences in terms of language utilization.	3.7	VMA	9
Encourages students to abstract and transfer their thoughts	4.9	HA	3
Encourages imagination of students to think vivid pictures of concepts.	5.0	HA	1.5
Average	4.3	VMA	

their intellectual development. As the conceptualized questions developed Higher Order Thinking Skills of the students, their reasoning and academic performance was improved, and the use of the podcast should be imposed

Acceptability of Podcast in terms of Time Frame

The Time Frame was interpreted as Very Much Acceptable with a composite mean of 4.34. This means that the time allotted for every lesson is appropriate and lessons and activities can be finished within allotted time.

Table 4. Acceptability of Science Podcast in terms of Assessment

Assessment	Average		
	Mean	Int	Rank
The different activities are applicable for Grade 10 Students.	3.7	VMA	9.5
Contents are simple, concise, and provide an avenue for learning	5.0	HA	1.5
Grade 10 Students will be familiar with basic concepts before proceeding to the next topic.	3.9	VMA	8
Prior Concepts will serve as additional inputs for the Grade 10 Students as they go on with higher Grade English	5.0	HA	1.5
Activities are needed by the students to understand concepts properly	4.5	HA	3
Exercises are in line with the level of comprehension.	3.7	VMA	9.5
Challenging to the students	4.0	VMA	6.5
Provide opportunities for instruction with learner	4.3	VMA	5
Questions can develop (HOTS)	4.0	VMA	6.5
Activities give opportunities to apply previous learned concepts each learning session.	4.4	VMA	4
Average	4.25	VMA	

It can also be finished within 32 days which are specified for every grading period. By the time-frame allotted wisely on this Developed Podcasts, Grade 10 Students can use it efficiently. Thus, better academic performance was improved and the use of the podcast for Grade 10 Students should be imposed.

Summary of the Acceptability of the Podcasts in Science for Grade 10 Students

Determining the acceptability, effectiveness and validity of teacher-made Instructional Materials to highlight its strengths and limit its weaknesses is highly relevant and suggested. Curriculum developers, module and book

Table 5. Acceptability of Science Podcast in terms of Time Frame

Time-Frame	Average		
	Mean	Int	Rank
Activities can be performed within a specified period of time.	4.8	HA	1
Activities can be done during the lecture sessions for the particular topic.	4.0	VMA	9
Time allotment for activities is in accordance to the time frame.	4.0	VMA	9
Activities are within the time frame	4.5	HA	3
Activities can be finished within 20 days	4.4	VMA	5.5
Activities can be given during the Collaborative Learning period.	4.4	VMA	5.5
Activities can be given as homework.	4.3	VMA	7
Student answers can be checked easily.	4.0	VMA	9
Student progress can be seen easily after 40 minutes -1 hour session.	4.5	HA	3
Developed Podcasts can be finished at the allotted time for the Third Grading Period.	4.5	HA	3
Average	4.34	VMA	

writers and instructional materials developers as well as must adhere to the principles and theories on learning. The summary of the Acceptability of the researcher's made Podcast in Science for Grade 10 students along: Objectives, Content, Language-Level, Assessment, and Time Frame is presented in Table 5. Out of five (5) terms, one indicator was interpreted as "Highly Acceptable" particularly the Objective with average mean of 4.50. In descending order, Assessment (4.34); Time-Frame (4.34); Content (4.30); and Language Level (4.25). The overall weighted mean was 4.35 and verbally interpreted as Very Much Acceptable.

The summary of the result implies that the researcher made Podcast in Science 10 contains an extreme manifestation of the indicators needed to evaluate the instructional material development. The data proved that the researcher-made podcast can be used in teaching Science 10 as additional materials that provides

Table 6. Summary of the Acceptability of the Podcasts in Science for Grade 10 Students

SL	Indicators	Average		
		Mean	Int	Rank
1.	Objectives	4.5	HA	1
2.	Content	4.3	VMA	4
3.	Language Level	4.25	VMA	5
4.	Assessment	4.34	VMA	2.5
5.	Time-Frame	4.34	VMA	2.5
Average		4.35	VMA	

appropriate learning objective, content and language sufficient enough to cater the needs of Grade 10 students.

The Test of Significant Agreement among the Rank Orders of Jurors' Assessment of the Developed Podcast

The Kendall's Coefficient of Concordance W was used to find out if there was an agreement or concordance among the ten Jurors who judged the acceptability of the Podcasts.

It can be gleaned that there were ten Jurors who evaluated

five terms. The sum of squares of difference, computed W and X2 Objectives, 1812.5, 0.23 and 20.59; 4451.5, 0.56 and 50.59 for Content; 3601.5, 0.457 and 40.93 for Language Level; 969, 0.122 and 11.01 for the Assessment and 1276.5, 0.16 and 14.51 for the Time Frame. Thus, the null hypothesis was rejected for the Objectives, Content and Language Level and so the alternative hypothesis was accepted. Along assessment and Time frame areas, the null hypothesis was accepted which implies that the ten Science Teachers that served as the Juror who assessed the developed podcasts did not agree on its qualities. Therefore, its acceptability is low and the developed podcasts in terms of assessment and time frame areas should be enhanced to deliver quality learning to Grade 10 students.

Based from the data, there was a significant agreement along the three terms of the podcast evaluated particularly the Objectives, Content and Language Level, thus, the Jurors' computed chi-square of Concordance of W was higher than the tabular X2 value, hence the researcher is 99.9% confident that the ten Jurors strongly agreed on the assessment of the Podcast for the Objectives, Content and language Level.

Table 7. The Test of Significant Agreement among the Rank Orders of Jurors' Assessment of the Developed Podcast

This implies that the utilization of podcast in Science strongly were agreed on its qualities. Therefore, its acceptability

was high and can be used to deliver quality learning to Grade 10 Students since it caters good objectives, content, and use language.

The Test of Significant Improvement from the Pre-test to the Post-test of the Experimental Group

The z-test for independent sample was used to determine if there is a significant improvement from pre-test to the post test of the Experimental Group. Table 6 reflects the computed standard deviation of the experimental group, where the computed mean was 38.275 composed of 1 group having 40 number of cases.

Table 7. The Test of Significant Agreement among the Rank Orders of Jurors' Assessment of the Developed Podcast

Indicator	Obj	Contents	Language	Assess	Time
Number of Jurors	10	10	10	10	10
Number of items being ranked	10	10	10	10	10
Sum of squares of the difference	1812.5	4451.5	3601.5	969	1276.5
Computed W	0.23	0.56	0.457	0.122	0.16
Computed X ²	20.59	50.59	40.93	11.01	14.51
Degree of freedom	9	9	9	9	9
Tabular X ² value at 0.05	16.919	16.919	16.919	16.919	16.919
0.025 0.01	19.679	19.679	27.877	27.877	27.877
0.001	21.666	21.666	21.666	21.666	21.666
	27.877	27.877	27.877	27.877	27.877
Decision on Null Hypothesis	Rejected	Rejected	Rejected	Accepted	Accepted
Significance of Agreement	0.025	0.001	0.001	Not Significant	Not Significant

The computed z-test was 10.980 and using the tabular value of 3.5581 at 0.0001 level of significance at 39 degree of freedom, the null hypothesis was rejected. This implies that there was a significant improvement from pre-test to post-test of the experimental group. Thus, the alternative hypothesis was accepted. Based from the data, the performance of the Experimental Group highly improved after instruction and exposure to the Developed Podcasts.

Table 8. The Test of Significant Improvement from the Pre-test to the Post-test of the Experimental Group

Indicator	Experimental Group
Number of Cases	40
Population Mean	38.275
Standard Deviation	11.89
Computed z	10.980
Degree of Freedom	39
Tabular z-test value at 0.05	1.6849
0.025	2.0227
0.01	2.4258
0.005	2.7079
0.0001	3.5581
Decision on Null Hypothesis	Rejected
Significance of Agreement	0.0001

Hence, it implies that Podcast can be used in teaching Science for Grade 10 students for them to increase their knowledge and enhance their competencies in science subject that can to better performance.

The Test of Significant Difference Between the Post Test Results of the Experimental Group and the Control Group

The z-test for independent sample was used to determine the significant difference in the post test of experimental and control group.

Table 9 presents the results of the test of significant

difference between the post-test of the two research subjects. Results revealed that both research subjects consisted of 40 number of cases, the control group had a mean of 30.88 while the experimental group had 38.28. The standard deviation of the control group was 4.03 while for the experimental group was 5.61. The computed z-value of the two groups was 6.78 which was higher than the z-tabular value which is 2.8891 at 78 degree of

Table 9. The Test of Significant Difference Between the Post Test Results of the Experimental Group and the Control Group

Indicator	Experimental Group
Number of Cases	40
Population Mean	38.275
Standard Deviation	11.89
Computed z	10.980
Degree of Freedom	39
Tabular z-test value at 0.05	1.6849
	2.0227
	2.4258
	2.7079
	3.5581
Decision on Null Hypothesis	Rejected
Significance of Agreement	0.0001

freedom at 0.0001 significance of difference. Thus, the null hypothesis was rejected and the researcher accepted the alternative hypothesis.

Therefore, there was a significant difference in the result of the post test of the two research subjects. The researcher can say that the level of intelligence of the research subjects is not the same or inversely proportional. The students' academic performance of the two research subjects was different as revealed by the result of the post test. The performance of the control group in the post test was low compared to the experimental group with a high performance.

This implies that there is really a need to use the

Science podcast for Grade 10 Students to improve their performance in Science. Thus, making them well prepared, well versed and more knowledgeable on the Science concepts.

The Pointers derived from the findings of the study on the Podcast for Grade 10 Students

The researcher developed a Science Podcast for Grade 10 Students to promote learning of Science Concepts and skills by providing relevant concepts and activities in Third Grading of Grade 10 Science. It is composed of 5 topics. This includes Coordinated Functions of Reproductive, Endocrine and Nervous System, Heredity, Biodiversity and Evolution and ecosystem.

The generated pointers based from the findings of the study were:

For the teachers

Use the Podcast in the motivation and assignment parts of the lessons; Provide transcription of the Podcast for the students; Post pictures and videos related to the podcast developed; Utilize the developed podcast using clear audio and video projector; Share the podcast files among the students to facilitate relearning of concepts.

For the learners

Use the podcast as their enhancement material to their learning process. This can help them to increase their academic performance. This will serve as their virtual tutor for their studies.

For the Curriculum Writers

Develop a separate learners' guide on how to use the Podcast effectively; Develop a website to publish the Podcast for students' consumption;

CONCLUSION

A Podcast in Science was developed by the researcher to teach the topics for the Third Quarter of Grade 10.

The set of jurors evaluated the Science Podcast as "Highly Acceptable" in terms of Objectives and "Very Much Acceptable" in Language Level, Assessment and Time-Frame while and Contents. There is a significant agreement on the order of the Jurors' evaluation on the acceptability of the Podcast along Objectives, Content and Language Level and there is no significant agreement for the Assessment and Time-Frame. The performance of the students in all content areas in the Third Grading Period was "Satisfactory" except for the Endocrine and Nervous System topic. The academic performance of the experimental group is significantly improved due to their utilization of Science Podcast.

There is a highly significant difference between the post test scores of the experimental group who used the Science Podcast than those students who were not given the same opportunity. There are pointers generated in using the Science Podcast effectively and to guide the teacher-users of the said instructional materials in teaching of Science 10 as well as to help students obtain better performance for the same subject.

Recommendations

The following recommendations were formulated:

There is a need to utilize the Science Podcast to enhance the learning outcomes, skills and knowledge of the learners.

Science teachers should use the Developed Podcast in Science 10 because of its effectiveness and high acceptability.

The Science podcast should be used by Grade 10 Students to increase their academic performance, vocabulary, and scientific knowledge.

Podcasts can also be used in the deepening and in the motivation phase of the lesson, associating concepts, summing up the lessons, and can be very effective if teacher will use rubrics to evaluate students' work.

Development of podcasts in other grade levels/ Sciences and other focus of Science 10 can be further developed.

Publication of this research and the research output should be made to encourage other science teachers to utilize the same technology in teaching science specializations.

The pointers strongly recommended in the study should be adopted and implemented to facilitate learning and improve the academic performance of students using the said technology.

Recommendations

Further study can be done on the effectiveness of Podcast but in other Grade Levels/Sciences, other subject areas, parts of the lessons, and in other schools.

More studies can be conducted on the assessment of the effectiveness of Podcast not just in learning but also in other related science endeavors such as in doing experiments, creating scientific investigations, and other highly relevant activities.

Development of e-media materials using podcast.

A development of lesson exemplar compilations and on-line reference materials using podcast.

Conducting similar study but in different locale, districts and divisions.

Portfolio assessment and reflection treatments while using researcher-made podcast.

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