

Micro-Lecture Teaching to improve the Learning of Junior High School Learners in Science

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Abstract

This is a quantitative study that aims to explore whether micro-lecture teaching such as self-made videos and infographics will improve students' academic achievements and enhance the learning motivation of Junior High School learners at San Francisco Integrated National High School than the Traditional Powerpoint Presentation. The respondents of this study were the Grade 7 Junior High School learners of San Francisco Integrated National High School. There was total of 120 learners from the 4 sections of Grade 7. There was also total of 60 combined Science and ICT Teachers who validated the materials made by the researcher. Moreover, the researcher created a 20-item validation tool served as questionnaires pertaining to the design, content, appropriateness and purpose of the Micro-Lecture used. Pre-test and post-test were also administered before and after each micro-lecture tool used. These has been treated using an independent samples t-test to evaluate the difference between participants' means of scores on the pre and the post measurements of academic performance.

The following were the significant findings of the investigation. The level of acceptance in micro-lecture teaching materials with regards to design. Infographics obtained the highest Overall mean of 4.58 with the SD of 0.67. The level of acceptance in micro-lecture teaching materials with regards to content. Self-made Video obtained the highest Overall mean of 4.77 with the SD of 0.55. Furthermore, the level of acceptance in micro-lecture teaching materials with regards to appropriateness the Traditional PPT got the highest Overall mean of 4.63 with the SD of 0.66. Based on the level of acceptance in micro-lecture teaching materials with regards to Purpose. The Traditional PPT obtained the highest Overall mean of 4.61 with the SD of 0.68.

However, the mean Performance of Students in Experimental Group Before and After Using the Self-Made Video and Infographics shows a significant difference. In self-made video, after using the material the satisfactory level which has a mean score of 17.05 and Standard Deviation of 8.72 leads to a very satisfactory with a mean score of 29.32 and standard deviation of 5.80. On the other hand, the use of infographics also shows a significant effect in which they have the same findings from satisfactory level to very satisfactory level before and after using the said material which is the infographics. When it comes to the Mean Performance of Students in Controlled Group Before and After Using the Traditional PPT, before using the material the learners obtained a mean score of 28.5 and standard deviation of 13.2 with verbal interpretation which is fairly satisfactory. After the use of the traditional PPT, the learner obtained a mean score of 35.75 and standard deviation of 11.79 with satisfactory rating. In this case, even though the learner's performance increases after each use of micro-lecture teaching materials, among the three materials Self-made video shows a highest increase performance after the use of material as compared to infographics and Traditional PPT. The result shows that Traditional PPT obtained a higher mean difference than the Infographics. The reason behind this could be the common use of the traditional PPT rather than the infographics. It could also possibly mean that the teacher is much more familiar and it mastered the making of the traditional PPT rather than the infographics. It is also matter on how the teacher make the micro-lecture. In Traditional PPT, the teacher can put up more and wide array of explanations rather than the infographics. Aside from this, the learners could also often use the traditional PPT rather than the infographics. They are often used Traditional PPT rather than infographics and the conveniency and familiarity on it plays a major role. Pertaining to the significant difference on the performance of the students before and after using the micro learning teaching materials used in experimental and controlled group. It has a significant difference before and after use of each material.

Keywords: Micro-Lecture, Self-Made Video, Infographics, Traditional Powepoint, Pre-Test, Post-Test

1. INTRODUCTION

Education has changed dramatically as a result of the digital age. The current rapid development of technology is certainly beneficial to our educational system. It has been demonstrated during this time of global pandemic where people, particularly teachers, students, and parents, maximized the use of technology by communicating with one another and even doing their lessons and any academic related matters. As a result, the traditional media method has many limitations and is gradually being replaced by a modern and technological method. Instead of the traditional method of teaching, Micro-Lecture Teaching has quietly emerged. Lesson will be a type of teaching in an online mode of delivery and even in a modular approach in which the teacher will send supplementary material to the learner via Facebook messenger.

David Penrose, a senior teaching designer and online service manager at the College of San Juan College in New Mexico, USA, proposed the concept of micro-lecture in 2008. He also recommends five steps for creating a micro-lecture, such as listing the core concepts of teaching, writing 15-30 seconds of introduction and summary, providing context for the

core concepts, recording videos of 1-3 minutes, designing after-class tasks to guide students in reading or exploring course knowledge, and uploading instructional videos and learning tasks to a learning management system.

When teaching Science, it is sometimes not possible to complete the task at home during the school year, and in some schools, the equipment and tools are insufficient. It is difficult to meet the needs of personalized learning with mostly confirmatory experiments and single teaching equipment. Less innovative and experimental testing, as well as a lack of practical skills, cause many students in group cooperation to lose enthusiasm for practical applications. The goal of micro-lectures is to condense hours of in-class teaching videos into minutes of video clips that still cover all of the key points in the teaching materials. In this manner, students can make the most of what they have learned through pre-designed curriculum and master all of the key points covered in each phase of instruction.

1.1 Objectives of the Study

This study is intended to improve the Learning of Junior High School Learners in Science by using Micro-Lecture Teaching such as Self-made Video, Infographics and the Traditional Power Point Presentation. Specifically, it sought to answer the following problems:

1. What is the level of acceptance of micro-lecture teaching materials with regards to;
 - 1.1 Design
 - 1.2 Content
 - 1.3 Appropriateness
 - 1.4 Purpose
2. What is the mean performance of the students in experimental group before and after using self – made video and infographics with regards to;
 - 2.1 Pre-test; and
 - 2.2 Post-Test?
3. What is the mean performance of the students in controlled group before and after using the Traditional PPT with regards to;
 - 3.1 Pre-test; and
 - 3.2 Post-test
4. Is there a significant difference between the performance of the students in experimental and controlled group before and after using the micro lecture materials in teaching?

2. METHODOLOGY

2.1 Research Design

This is a quantitative study that aims to explore whether the micro-lecture teaching such as self-made video and infographics will improve students' academic achievements and enhancing the learning motivation of Junior High School learners at San Francisco Integrated National High School than the Traditional Power point Presentation or slide deck.

2.2 Respondents of the Study

The respondents of this research were the Grade 7 Junior High School learners of San Francisco Integrated National High School. There were total of 120 learners from the 4 sections of Grade 7. There were 30 learners from Grade 7 Binan, 30 Learners from Grade 7 Calamba and another 30 learners from Grade 7 Sta. Rosa and another 30 learners from Grade 7 Pagsanjan who has been given a pre-test and a post-test.

There were also total of 60 Science combined with ICT Teachers who validated the materials made by the researcher. 20 combined Science and ICT teachers who validated the Traditional PPT, 20 combined Science and ICT teachers who validated the Self-Made Video and another 20 combined Science and ICT teachers who validated the Infographics made by the researcher.

2.3 Research Procedure

It all began with the proposal of the researcher to the panelist of the Research Group. The researcher gathered data about micro-lecture teaching by means of searching online, reading journals, books and other relate studies and literatures. The researcher also started making the materials to be used in the implementation of the research such as the Self-Made Video, Infographics and Traditional PPT. Using different application such as Canva, Filmora, and the Microsoft Power Point Presentation. The design of the learning materials was solely made by the researcher, with regards to the content of the learning materials, it was based on the Most Essential Learning Competencies issued by the Department of Education. After all the materials has been made, the researcher created a Pre-Test and Post Test for each particular lesson which was administered at the beginning of the lesson, before the use of Micro-Lecture Teaching and after the lesson, which the students were able to use the Micro-Lecture Teaching such as Self-made Video, Infographics and Traditional Power point.

After creating all the materials needed, validation of the materials has been made followed by its implementation. The researcher asked for the help of the 60 combined Science and ICT Head Teachers, Master Teacher and other Teachers who validated the materials. The validators checked and validated the Design, Content, Appropriateness and Purpose of the materials. Reliability Test has been made before the full implementation of the experiment. Therefore, the researcher randomly selected 10 responses from the validators for each Micro-Lecture tool. Based on the result of the reliability test Cronbach Alpha for the Self-Made Video, the domain "design" in the questionnaire obtained a Cronbach Coefficient Alpha of 0.833. The coefficient obtained connotes to have Good Reliability. The domain "content" in the questionnaire obtained a Cronbach Coefficient Alpha of 0.423. The coefficient obtained connotes to have Unacceptable Reliability which slightly changes has been made and that is to focus more on the content to make it Good Reliability. The domain "appropriateness" in the questionnaire obtained a Cronbach Coefficient Alpha of 0.913. The coefficient obtained connotes to have Good Reliability. The domain "purpose" in the questionnaire obtained a Cronbach Coefficient Alpha of 0.896. The coefficient obtained connotes to have Good Reliability. When it comes to the reliability test Cronbach Alpha of the Infographics, the domain "design" in the questionnaire obtained a Cronbach Coefficient Alpha of 0.811. The coefficient obtained connotes to have Good Reliability. The domain "content" in the questionnaire obtained a Cronbach Coefficient Alpha of 0.506. The coefficient obtained connotes to have Unacceptable Reliability that is why slightly changes in the content has been applied. The domain "appropriateness" in the questionnaire obtained a Cronbach Coefficient Alpha of 0.939. The coefficient obtained connotes to have Good Reliability. The domain "purpose" obtained of 0.888 with indication as Good Reliability.

For the Traditional PPT, the domain "design" in the questionnaire obtained a Cronbach Coefficient Alpha of 0.853. The coefficient obtained connotes to have Good Reliability. The domain "content" in the questionnaire obtained a Cronbach Coefficient Alpha of 0.284. The coefficient obtained connotes to have Unacceptable Reliability like Self-made video and infographics, changes has been made to make it Good Reliability. The domain "appropriateness" in the questionnaire obtained a Cronbach Coefficient Alpha of 0.897. The coefficient obtained connotes to have Good Reliability. The domain "purpose" in the questionnaire obtained a Cronbach Coefficient Alpha of 0.909. The coefficient obtained connotes to have Good Reliability. Then, the full implementation of the experiment has been executed at San Francisco Integrated National High School during School Year 2021 – 2022. The respondents or the learners involved in this study were divided into two groups: The Control Group and the Experimental Group. The experimental group adopted the micro-lecture teaching method, while the control group employed traditional Power point presentation teaching method. Both classes used the same teaching content and taught by the same teacher.

Before the implementation of the Micro-Lecture teaching, both groups, the control and experimental group took a Pre-Test with the same content and at the same week. The result of the Tests was used to measure their prior knowledge and their knowledge in doing the normal set-up which is during this time, the modular approach of learning. At the beginning of the experiment which was first to fourth week during third quarter period, the teacher sent to the Experimental Group some supplementary material which was the self-made video. The learners utilized the video while they were answering their Learning Task. At the fifth to eight weeks of the third quarter period, the teacher sent the infographics to the learner as another supplementary material which were used in answering their task for those particular weeks. Meanwhile, during these periods, the control group received a traditional Power point presentation in jpeg format as learners' supplementary material, in the absence of digital materials such as mobile phone, laptop or computer, the researcher provided a hardcopy or printable copy of the traditional power point presentation in image form. After each Micro-Lecture tool, a post-test which contains the same content were administered to both groups, control and experimental group to check the differences, the improvement and the performance in Science Subject of the learners for each group. The control group who used the traditional way of learning which was the Power point presentation and the experimental group who used the Micro-Lecture Teaching such as Self-made Video and Infographics as mode of learning.

For the Lesson 1-3 it was all about Describing Motion using the Distance and Displacement, Speed and Velocity and Acceleration. These lessons were taught during the first to fourth week of the third quarter period.

For the Lesson 4 – 6 it was all about Characteristics of Waves, Parts of Waves, Sound Waves and Light particularly the Electromagnetic Spectrum. While these lessons were taught during the fifth to eight weeks of the third quarter period.

2.4 Research Instrument

The researcher created a 40-item pre-test before each implementation of micro-lecture teaching tool, then another 40-item post-test after the implementation of each micro-lecture teaching such as self-made video, infographics and traditional power point presentation.

The researcher designed a 20-item questionnaire as part of validation of the micro-lecture tool given as survey questionnaire or validation tool to the Science and ICT teacher which was consisting of four components: The Design (5 items), The content (5 items), the appropriateness (5 items), and the purpose (5 items) of the micro-lecture teaching tool. A five-point Likert scale were used in order to weigh each item in the questionnaire.

Five-Point Likert Scale	Equivalent
5	Strongly Agree
4	Agree
3	Moderately Agree
2	Barely Agree
1	Disagree

In order to evaluate the difference between participants' means of scores on the pre-measurements and post-measurements of academic performance, an independent samples t-test has been employed for the sake of data analysis of the study.

3. RESULTS AND DISCUSSION

This section deals with the presentation, analysis and interpretation of data gathered to answer the sub problem relative to the main problem of this study. This part discusses the findings of the study based on the research questions.

1. What is the level of acceptance of micro-lecture teaching materials with regards to;
 - 1.1 Design
 - 1.2 Content
 - 1.3 Appropriateness
 - 1.4 Purpose

Statements	Experimental						Controlled		
	Self-made videos			Infographics			Traditional PPT		
	Mean	SD	Remarks	Mean	SD	Remarks	Mean	SD	Remarks
1. The design is captivating.	4.45	0.83	Strongly Agree	4.40	0.82	Strong Agree	4.40	0.88	Strongly Agree
2. The resolution and colors are fitted for viewing and reading.	4.35	0.75	Strongly Agree	4.45	0.69	Strongly Agree	4.35	0.75	Strongly Agree
3. The length caters readers' interest.	4.55	0.76	Strongly Agree	4.65	0.67	Strongly Agree	4.65	0.67	Strongly Agree
4. The design meets or exceeds desired objectives.	4.55	0.76	Strongly Agree	4.65	0.59	Strong Agree	4.40	0.82	Strongly Agree
5. I can finish reading or watching without skipping parts.	4.60	0.68	Strongly Agree	4.75	0.55	Strongly Agree	4.70	0.57	Strongly Agree
Overall	4.50	0.75		4.58	0.67		4.50	0.75	
Verbal Interpretation	Very high			Very high			Very high		
Legend:									
4.21 – 5.00 Strongly Agree (SA) Very High									
3.41 – 4.20 Agree (A) High									
2.61 – 3.40 Moderately Agree (MA) Moderately High									
1.81 – 2.60 Disagree (DA) Low									
1.00 – 1.80 Strongly Disagree (SDA) Very Low									

Table 1. Level of Acceptance of Micro-Lecture Teaching Materials with regards to Design

Table 1 shows the level of acceptance in micro-lecture teaching materials with regards to design. It shows that all of the Micro-Lecture Teaching Materials with regards to the design the verbal interpretation obtained was Very High, however infographics obtained the highest Overall mean of 4.58 with the SD of 0.67.

Statements	Experimental						Controlled		
	Self-made videos			Infographics			Traditional PPT		
	Mean	SD	Remarks	Mean	SD	Remarks	Mean	SD	Remarks
1. The contents are aligned to the Most Essential Learning Competencies (MELC).	4.65	0.67	Strongly Agree	4.65	0.59	Strongly Agree	4.70	0.56	Strongly Agree
2. The content presented are easy to understand.	4.75	0.55	Strongly Agree	4.75	0.44	Strongly Agree	4.60	0.73	Strongly Agree
3. The content presented are relevant to the lesson.	4.80	0.52	Strongly Agree	4.75	0.55	Strongly Agree	4.70	0.56	Strongly Agree
4. It provides sufficient explanation.	4.80	0.52	Strongly Agree	4.65	0.49	Strongly Agree	4.75	0.54	Strongly Agree
5. Specific focus of discussion is given.	4.85	0.49	Strongly Agree	4.55	0.69	Strongly Agree	4.70	0.64	Strongly Agree
Overall	4.77	0.55		4.67	0.55		4.69	0.61	
Verbal Interpretation	Very high			Very high			Very high		
Legend:									
4.21 – 5.00 Strongly Agree (SA) Very High									
3.41 – 4.20 Agree (A) High									
2.61 – 3.40 Moderately Agree (MA) Moderately High									
1.81 – 2.60 Disagree (DA) Low									
1.00 – 1.80 Strongly Disagree (SDA) Very Low									

Table 2. Level of Acceptance of Micro-Lecture Teaching Materials with regards to Content

Table 2 shows the level of acceptance in micro-lecture teaching materials with regards to content. It shows that all of the Micro-Lecture Teaching Materials with regards to the content verbal interpretation obtained Very High, however self-made Video obtained the highest Overall mean of 4.77 with the SD of 0.55.

Statements	Experimental						Controlled		
	Self-made videos			Infographics			Traditional PPT		
	Mean	SD	Remarks	Mean	SD	Remarks	Mean	SD	Remarks
1.It suits to the taste of the reader and viewer.	4.70	0.66	Strongly Agree	4.60	0.68	Strongly Agree	4.70	0.66	Strongly Agree
2.It is fun to read or watch.	4.70	0.66	Strongly Agree	4.60	0.68	Strongly Agree	4.65	0.67	Strongly Agree
3.The words used are appropriate to the readers and viewers.	4.60	0.60	Strongly Agree	4.80	0.41	Strongly Agree	4.80	0.41	Strongly Agree
4.The pictures used are appropriate to the readers and viewers.	4.60	0.60	Strongly Agree	4.55	0.69	Strongly Agree	4.50	0.76	Strongly Agree
5. It is easy to share with other learners.	4.50	0.76	Strongly Agree	4.55	0.69	Strongly Agree	4.50	0.76	Strongly Agree
Overall	4.62	0.65		4.62	0.63		4.63	0.66	
Verbal Interpretation	Very high			Very high			Very high		

Legend:

4.21 – 5.00 Strongly Agree (SA) Very High
 3.41 – 4.20 Agree (A) High
 2.61 – 3.40 Moderately Agree (MA) Moderately High
 1.81 – 2.60 Disagree (DA) Low
 1.00 – 1.80 Strongly Disagree (SDA) Very Low

Table 3. Level of Acceptance of Micro-Lecture Teaching Materials with regards to Appropriateness

Table 3 shows the level of acceptance in micro-lecture teaching materials with regards to Appropriateness. It shows that all of the Micro-Lecture Teaching Materials with regards to the appropriateness verbal interpretation obtained Very High, however the Traditional PPT obtained the highest Overall mean of 4.63 with the SD of 0.66.

Statements	Experimental						Controlled		
	Self-made videos			Infographics			Traditional PPT		
	Mean	SD	Remarks	Mean	SD	Remarks	Mean	SD	Remarks
1.It helps me to understand the lesson.	4.60	0.68	Strongly Agree	4.45	0.60	Strongly Agree	4.60	0.68	Strongly Agree
2.It improves my learning in Science Subject.	4.60	0.68	Strongly Agree	4.40	0.82	Strongly Agree	4.60	0.75	Strongly Agree
3.It gives positive impression about the lesson.	4.45	0.69	Strongly Agree	4.65	0.59	Strongly Agree	4.65	0.59	Strongly Agree
4.It helps me to be motivated in studying my lesson.	4.60	0.68	Strongly Agree	4.70	0.57	Strongly Agree	4.60	0.75	Strongly Agree
5.I will always consider using infographics, self-made video and traditional PPT in studying my lesson.	4.55	0.69	Strongly Agree	4.65	0.59	Strongly Agree	4.60	0.68	Strongly Agree
Overall	4.56	0.67		4.57	0.64		4.61	0.68	
Verbal Interpretation	Very high			Very high			Very high		

Legend:

4.21 – 5.00 Strongly Agree (SA) Very High
 3.41 – 4.20 Agree (A) High
 2.61 – 3.40 Moderately Agree (MA) Moderately High
 1.81 – 2.60 Disagree (DA) Low
 1.00 – 1.80 Strongly Disagree (SDA) Very Low

Table 4. Level of Acceptance of Micro-Lecture Teaching Materials with regards to Purpose

Table 4 shows the level of acceptance in micro-lecture teaching materials with regards to Purpose. It shows that all of the Micro-Lecture Teaching Materials with regards to the purpose verbal interpretation obtained Very High, however the Traditional PPT obtained the highest Overall mean of 4.61 with the SD of 0.68.

2. What is the mean performance of the students in experimental group before and after using self – made video and infographics with regards to;

- 2.1 Pre-test; and
- 2.2 Post-Test?

Scores	Self-made Videos				Infographics				Remarks
	Before		After		Before		After		
	Freq.	Per.	Freq.	Per.	Freq.	Per.	Freq.	Per.	
33-40	4	6.67%	19	31.67%	0	0.00%	5	8.34%	Outstanding
25-32	9	15%	28	46.67%	10	16.66%	26	43.33%	Very Satisfactory
17-24	13	21.67%	13	21.66%	27	45.00%	26	43.33%	Satisfactory
9-16	26	43.33%	0	0.00%	22	36.67%	3	5%	Fairly Satisfactory
0-8	8	13.33%	0	0.00%	1	1.67%	0	0.00%	Dis Not Meet Expectation
Total	60	100%	60	100%	60	100%	60	100%	
Mean	17.05		29.32		18.30		24.55		
SD	8.72		5.80		6.02		6.11		
Verbal Interpretation	Satisfactory		Very Satisfactory		Satisfactory		Very Satisfactory		

Legend:

- 32.01 – 40.00 Outstanding (O)
 24.01 – 32.00 Very Satisfactory (VS)
 16.01 – 24.00 Satisfactory (S)
 8.01 – 16.00 Fairly Satisfactory (FS)
 0.00 – 8.00 Did Not Meet Expectation (DME)

Table 5. Mean Performance of Learners in Experimental Group Before and After Using the Self-Made Video and Infographics

Table 5 showcase the mean performance of the students in experimental group before and after using the self-made videos and infographic materials. Before using the self-made videos, out of sixty (60) respondents, there are eight (8) learners who able to score between 0 to 8 which obtained a percentage of 13.33% with a remark of learners who did not meet the expectation, twenty-six (26) were able to score between 9 to 16 points which was 43.33% of the total population remarked as fairly satisfactory. This is followed in frequency by those who performed satisfactorily and gained 17 to 24 points which is 21.67% of the population. On the other hand, only 15% gained scores between 25 and 32 which was Very Satisfactory and only 6.67% gained scores between 33 to 40 which was marked as Outstanding. It can be seen that the group of learners attain Satisfactory performance with the ($M=17.05$, $Sd=8.72$) before using the self-made videos

Similarly, out of sixty (60) respondents, ten (10) were able to score between 25 to 32 which was 16.66% of the total population remarked Very Satisfactory, twenty-seven (27) were able to score between 17 to 24 points which was 45.00% of the total population remarked as satisfactory. This is followed in frequency by those who performed fairly satisfactorily and gained 9 to 16 points which is 36.67% of the population. On the other hand, only 1.67% gained scores between 0 and 8 which did not meet expectations. The ($M=18.3$, $Sd=6.02$) before using infographics also attain the Satisfactory performance. This means that the majority of the students have pre-existing knowledge about the content of the topic.

On the other side of the table revealed the result on the performance of the students after the use of micro-lecture teaching materials twenty-eight (28) respondents gained scores between 25 and 32 which was very satisfactory. This is followed by those who had performed on an outstanding level with nineteen (19) students who gained scores between 33 and 40. The remaining 21.67% of the population or thirteen (13) students gained scores from 17 to 34 points which was satisfactory. This further explain that after using the micro teaching materials the result revealed Very Satisfactory performance of the students. The ($M=29.32$, $Sd=5.80$) after using self-made videos, ($M=24.55$, $Sd=6.11$) after using infographics. This imply that majority of the students appreciate the used of self-videos and infographics that result on the increase of their performance.

3. What is the mean performance of the students in controlled group before and after using the Traditional PPT with regards to;

- 3.1 Pre-test; and
 3.2 Post-test

Scores	Traditional PPT				Remarks
	Before		After		
	Frequency	Percentage	Frequency	Percentage	
65-80	0	0.00%	0	0.00%	Outstanding
49-64	4	6.67%	9	15.00%	Very Satisfactory
33-48	17	28.33%	24	40.00%	Satisfactory
17-32	26	43.33%	26	43.33%	Fairly Satisfactory
0-16	13	21.67%	1	1.67%	Did Not Meet Expectation
Total	60	100%	60	100%	
Mean		28.5		35.75	
SD		13.2		11.79	
Verbal Interpretation	Fairly Satisfactory		Satisfactory		

Legend:

64.01 – 80.00 Outstanding (o)

48.01 – 64.00 Very Satisfactory (VS)

32.01 – 48.00 Satisfactory (S)

16.01 – 32.00 Fairly Satisfactory (FS)

0.00 – 16.00 Did Not Meet Expectation (DME)

Table 6. Mean Performance of Students in Controlled Group Before and After Using the Traditional PPT

Table 6 showcase the mean performance of the students in controlled group before and after Traditional PPT. Before using the traditional PPT, out of sixty (60) respondents, there are thirteen (13) learners who were able to score between 0 to 16 which obtained a percentage of 21.67% with a remark of learners who did not meet the expectation, twenty-six (26) were able to score between 17 to 32 points which was 43.33% of the total population remarked as fairly satisfactory. This is followed in frequency by those who performed satisfactorily and gained 33 to 48 points which is 28.33% of the population. On the other hand, 6.67% gained scores between 49 and 64 which was Very Satisfactory. It can be seen that the group of learners attained Fairly Satisfactory performance with the (M= 28.5, Sd=13.2) before using the Traditional PPT.

On the other side of the table revealed the result on the performance of the students after the use of micro -lecture teaching material which is the Traditional PPT, nine (9) respondents gained scores between 49 and 64 which was very satisfactory. This is followed by those who had performed on a satisfactory level with twenty-four (24) students who gained scores between 33 and 48. The other 43.33% of the population or twenty-six (26) students gained scores from 17 to 32 points which was fairly satisfactory. The remaining 1.67% which ranges from 0 to 16 did not meet the expectation. This further explain that after using the traditional PPT the result revealed Satisfactory performance of the students. The (M=28.5, Sd=13.2) before using Traditional PPT, (M= 35.75, Sd= 11.79) after using Traditional PPT. This imply that majority of the students appreciate the used of traditional PPT that result on the increase of their performance.

4. Is there a significant difference between the performance of the students in experimental and controlled group before and after using the micro lecture materials in teaching?

		Before	After	Mean Difference	t-value	p-value	Analysis
		Mean	Mean				
Experimental	Self-made videos	17.05	29.32	12.27	-9.08	0.000	Significant
	Infographics	18.30	24.55	6.25	-5.65	0.000	Significant
Controlled	Traditional PPT	28.50	35.75	7.25	-3.17	0.002	Significant

Table 7. Significant Difference Between the Performance of the Students in Experimental and Controlled Group Before and After Using the Micro Lecture Teaching Materials

Table 7 indicate the significant difference on the performance of the students before and after using the micro learning teaching materials used in experimental and controlled group. Self- made videos, infographics has significant difference on the result of their performance with the (p= 0.00) (t= -9.08) for self -made videos, (p=0.00) (t= -5.65) for infographics. The p value is lower than (0.05) level of significance which supported the result of the analysis. This means student appreciate the use of the materials that result to the increase of their performance. The used of traditional PPT in the other group of learners also gain the (p= 0.00) (t= -3.17) which is also lower than the alpha value of 0.05 level of significance micro- lecture teaching materials such as self-made- videos, infographics and traditional PPT help the students to improve and attain the learning competency in certain areas.

Looking at the mean difference among the three micro-lecture, self-made video obtained a highest mean difference which shows its effectivity. The teacher can clearly explain the lesson well with this tool by means of

presenting different examples in each topic. Audio-visual presentation of the lesson plays an important role on this type of micro-lecture teaching. 909

Surprisingly, the traditional PPT obtained a higher mean difference than traditional PPT this is because of several factors such as the familiarity of the learners in using the traditional PPT rather than infographics, the wide array of explanation that can be included in it, the presentation of the traditional PPT that is much more convenient to the learners. The teacher also contributes to the surprisingly result of the study. The way on how the teacher created the traditional PPT, the content and clear explanation included in it and most specially the mastery of the teacher when it comes to the making or creating of the traditional PPT. Since infographics is just a recent addition to the tools being used in the learners as well as the new instructional materials to be used by the teacher, it creates some sort of adjustment to both learners and teacher.

From the finding above the first null hypothesis which is “There is no significant difference between the Science Subject of Junior High School Learners’ pre-test and post-test” was rejected.

4. CONCLUSION AND RECOMMENDATION

The study “Micro-Lecture Teaching to Improve the Learning of Junior High School Learners in Science” was conducted to explore whether micro-lecture teaching such as self-made videos and infographics will improve students’ academic achievements and enhance the learning motivation of Junior High School learners at San Francisco Integrated National High School than the Traditional Powerpoint Presentation. Based on the gathered data, the significant difference between the performance of the students in experimental and controlled group before and after using the micro lecture materials in teaching. It can be inferred that at 0.05 level of significance, the null hypothesis “There is no significant difference between the performance of the students in experimental and controlled group before and after using the micro lecture materials in teaching.” is rejected. It implies that the use of micro-lecture teaching materials such as self-made video and infographics makes a significant difference and improves learners' learning in science.

Based on the draw conclusions, the following recommendations are hereby offered:

The instructional design and content of the micro-lecture tools should be based on different needs of students, and pay attention to novelty and elicitation in order to achieve a better teaching effect. Teachers are encouraged to use Micro-Lecture tools in delivering lesson whether it is synchronous or asynchronous method of teaching. In addition, elevate further research with the integration of Micro-Lecture Short courses which involved active learning to be followed by drills and activities in teaching Science for Junior High School Learners. Lastly, encourage all the teachers to participate actively in developing their skills in creating micro-lecture teaching tools and short courses.

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