Table 1.3 Comparison of Students' Scores Pre-Test and Post-Test

Description	Pre-Test	Post-Test	% Increase/Decrease
Passed	55.56%	100%	44.44
Failed	44.44%	0%	-44.44

The Table 1.3 above shows the comparison of the students' scores during the pre test and post test. The table also presents the percentage of students who passed and failed in the pre-test and post-test and the percentage increase/ decrease of the number of students who passed or failed the test.

Based on table 1.3, the result shows that 55.56% of the participants passed the pre-test while 100% passed the post test. This indicates that there is an increase of 44.44% of the participants who passed the test. The table also shows that there are 44.44% of the participants who failed the pre-test while 0% failed in the post test. This indicates that there is a decrease of 44.44% of the participants who failed the post test. This implies that there is an improvement of students' scores when the EdPuzzle was utilized. It also implies that the students retained the content from the EdPuzzle Pre-laboratory procedures discussion video.

The study revealed that employing educational technology such as Edpuzzle Learning Videos proved effective in learning Biology for Middle Secondary School. Moreover, academic scores increased on the post-test as a result of the student's active participation and engagement in their studies (Kinga Tshering ,Kesang Wangchuk , Nima Dorji, Kelzang Dema, 2022).

Table 17.4 Results According to the Paired T-Test

	n	Mean	SD	t-cal/ stat	df	p
Pre-Test	27	7.37	1.64	-10.9	26	<0.001
Post- Test	27	11.67	1.88			

Table 1.4 contains the findings of the paired t-test that was performed in order to analyze the significant difference in score between the pretest and the post test. Since the p-value that was calculated as a result of the data found to be less than 0.05, this demonstrates that the difference in score that was achieved between the pretest and the post test was one that was statistically significant. The n = 27 based on the number of students and the mean of the pretest is 7.37 and the mean of the post test is 11.67 which has -10.9 of its statistics.

Based on the data, the “null hypothesis,” which states that there is no significant difference between the scores on the pretest and the post test, cannot be supported. This indicates that there is evidence to suggest that the pre-test scores and the post-test scores are significantly different from one another and that the intervention, which is the EdPuzzle pre-laboratory discussion video being utilized, had resulted on the subject.

Table 2. Rubric Analysis Results

Group #	On Performing the Experiment	Handling the Apparatus	Follows Safety Laboratory Measures and Guidelines	Knowledge of the Experiment	Total Score
1	4 (Sophisticated)	4 (Sophisticated)	3 (Acceptable)	4 (Sophisticated)	15
2	3 (Acceptable)	4 (Sophisticated)	3 (Acceptable)	3 (Acceptable)	13
3	3 (Acceptable)	3 (Acceptable)	2 (Developing Competence)	4 (Sophisticated)	12
4	2 (Developing Competence)	4 (Sophisticated)	3 (Acceptable)	3 (Acceptable)	12
5	3 (Acceptable)	3 (Acceptable)	4 (Sophisticated)	4 (Sophisticated)	14
6	3 (Acceptable)	3 (Acceptable)	3 (Acceptable)	4 (Sophisticated)	13

Table 2. Rubric analysis shows the raw scores of the groups based on the observation rubric. The score of 4 is the highest rate and the score of 1 is the least score, these scores are associated with its descriptors (4-Sophisticated, 3-Acceptable, 2-Developing Competence, and 1-Inadequate), since there are 4 criteria for scoring, the

total score of this rubric is 16, that is equivalent to 100%. The total score of each group is varied based on the percentage the score falls to, as 15 is the highest score from Group 1, equating to 95.7%. Followed by Group 5 for having a total score of 14, which is 87.5%. Groups 2 and 6 have a score of 13, which is equivalent to 81.25%. While Groups 3 and 4 on the other hand have a total score of 12, that equates to 75%.

Table 2.1 Results on the Average Scores of Students in the Test and Performance Rubric

Group Number	Coded Names	Total Average of the Pre and Post Test Scores Per Student	Total Average of the Pre and Post Test Scores Per Group	Total Score of Rubric per Group
1	0023	10	9.875	15
	0014	7.5		
	0020	11		
	0021	11		
2	002	11.5		
	0011	8.5		
	0015	10.5	9.6	13
	0017	9		
	0026	8.5		
3	0018	9.5	9.375	12
	001	10		
	0027	9		
	009	9		
4	005	11.5	10.375	12
	0019	10		
	0025	10.5		
	007	9.5		
5	007	8.5		
	004	10		
	006	8.5	9.1	14
	0013	9		
	0022	9.5		
6	008	11.5		
	0024	10		
	003	8	8.7	13
	0012	7		
	0010	7		

Table 2.1 Results of the Average Scores of Students in the Test and Performance Rubric discusses the relation of the individual average scores of the pre-test and post-test of the students and to their corresponding groups. The names of the students are labeled as codes to protect their data. As seen in the first group, the average scores of each student varies to each other, yet their overall scores in the performance rubric falls to have the highest rating, having a score of 15. Followed by the second group, the scores of the students still vary from one another and have a total score of 13 in the performance rubric. In the third and fourth group, both have the performance rubric score of 12 and the average test scores of the students still vary from their group mates. In the fifth group, their group has a performance score rubric of 14 and as observed in their individual test scores, all still differ from one another. And to the last group, the sixth group has an overall performance score of 13 and the scores of each of the members in this group still varies from one another.

From this information, it shows that regardless of the variation of scores of the students in the pre-test and post-test, the groups were still able to have good scores in the performance assessment. As this research study does not only measure the cognitive knowledge of the students comprehension of the laboratory procedure, but this also measure the student’s retention skills in performing the laboratory experiment, with the guided steps of the procedures that was discussed in the pre-laboratory discussion through the integration of the online application EdPuzzle. According to Katherine Sauro (2022) kinesthetic performance in the classroom positively affects students' academic achievement. Further, she suggests that students being provided with movement spend notably more time on task than those who are stationary.

Researchers were able to make a number of conclusions regarding how employing the EdPuzzle pre-laboratory discussion video improves student retention according to the findings of the *thematic analysis* that was done following focus group discussions. As a result, the focus group discussion participant's replies demonstrated considerable improvements in their experiment preparation and laboratory performance.

Theme 1: Informative and Prepares students

According to the students' experiences, utilizing the EdPuzzle pre-laboratory discussion enabled them to equip themselves with essential knowledge about the experiment. It gave them the opportunity to learn technical concepts prior to the laboratory session, and made them feel motivated on the things to expect. This implies that EdPuzzle helps students to be prepared prior to the Laboratory Experiments.

According to the University of California (2022), utilizing a discussion of the pre-lab assignment as the basis for the pre-lab introduction and as a tool for presenting the lab, it is possible to make sure that the students have a solid understanding of the subject matter before the actual lab work commences.

Theme 2: Boosts confidence and Provides guidance

Students appear more prepared for their laboratory experiments as a result of the integration of EdPuzzle's pre-laboratory discussion video, according to their responses. The EdPuzzle is really helpful in letting them know what to do and what not to do. It provided them with precise information and instructions for carrying out the experiments. Since the Laboratory procedure was incorporated into EdPuzzle, students also don't have as much confusion.

From the study of Dalgarno et al., (nd), students who utilized the virtual laboratory were generally positive about the value of the virtual laboratory in contributing to their confidence and reducing their anxiety about practical work. Majority of the students expressed that the virtual laboratory contributed their knowledge to locate tools of apparatus, and to work out which laboratory apparatus to use, which they assumed would have improved their confidence.

Theme 3 : Motivating and Increases optimism

Students were more motivated and interested in conducting more experiments as a result of the incorporation of the EdPuzzle pre-laboratory discussion video. The students were motivated because it gave them the opportunity to take charge of their own education and develop metacognitive abilities. One important characteristic that the

learners greatly valued was the availability and simplicity of information, made possible by the use of digital tools such as EdPuzzle. This implies that the use of EdPuzzle Pre-Laboratory discussion video promotes students' motivation.

Pre-lab modules that provide information and questions on the difficult conceptual concepts pertinent to the lab experiment can easily be added to current expository laboratories to enhance students' comprehension of background theory and its relationship to practice (Haagsman et al., 2020).

Results from the Focus Group Discussion Responses of the Students were grouped in accordance with the following major themes that came to light during data analysis, namely: Informative and Prepares students, Boosts confidence and Provides guidance, and Motivating and Increases optimism.

The results of this study be used to further improve the laboratory procedures retention of grade 9 students in a hybrid mode of learning.

Through the pre-laboratory discussion video, the students' performance improved on doing the experiment since they were able to correct assumptions about the experiment, concretize conceptual and procedural knowledge, and address what might happen negatively during the experiment. In connection to this, student motivation also increased. Since the integration of EdPuzzle pre-laboratory discussion enables the students to be prepared prior to conducting the experiment, it also piques their interest on the things to expect after the experiment. Moreover, it enables them to appreciate things in their surroundings and piques their interest in conducting more experiments in the future to further understand in-depth why those things are the way they are in the environment. The pre-laboratory discussion video therefore, improved students' preparedness and motivation in conducting the experiment which increased their confidence on how they manipulate different apparatus and do the experiment in general with lesser guidance from their teacher.

The adoption of this study enhances the laboratory performance of the students and to continue utilizing EdPuzzle to other laboratory experiments with the utmost guidance of the laboratory technician since they are more inclined to the laboratory

procedures and measurements, but of course in collaboration with the subject teacher. Furthermore, together with the integration of EdPuzzle, there should be at least a two week gap between the intervention and post-test. In addition, it might not only be limited to Chemistry experiments but to other areas in Science.

Conclusion

The results of the data analysis indicate that there is a significant change in terms of the integration of the Pre-Laboratory Procedure Video to the students' performance and knowledge in their soap-making experiment. The scores of the students in comparison to their pre-test improves based on the results of their post-test. Thus, this just tells that the integration of the online application EdPuzzle helped the student's understanding of the laboratory manual, rather than just reading the manual alone. In relation to the student's kinesthetic performance in doing the experiment, based on the scores of each group, all of them fall to being sophisticated in their experiments. This includes how the student handles the apparatus, follows the laboratory safety protocol and guidelines, and the overall knowledge of performing the experiment. Hence, through the EdPuzzle video, the students became confident and knowledgeable about the procedures on performing their soap-making experiment. They get to be familiar with the accurate measurements of the liquid substances being used and what are the experimental milestones that they should be expecting to reach the success of their experiment. Moreover, the integration of the online application EdPuzzle allows the Grade-9 students to be more engaged and helps them retain information, to be able to perform their experiments following the right procedures and less supervision of their teacher. Furthermore, the innovation of teaching methods in handling the 21st Century

students is critical for the development of a successful learning process. With the use of the online application EdPuzzle, the success of the student's experiment resulted in a positive outcome as their soap successfully saponified.

RECOMMENDATIONS

There are certain gaps that this research was unable to address but which would benefit from further investigation. In light of this, the recommendations below are made.

1. To consolidate additional studies and different research that employs the same method of integration on the application and usefulness of instructional technology such as EdPuzzle Learning Videos. And to confirm its effectiveness of integration.
2. The lab technician and the teacher worked together to create the pre-laboratory discussion video.
3. The Xavier University Junior High School Science Department faculty may consider the utilization of EdPuzzle as a Pre-Laboratory tool in enhancing conceptual knowledge retention.
4. The Xavier University Junior High School Science Department faculty may consider the utilization of EdPuzzle as a Pre-Laboratory tool in enhancing procedural knowledge retention.

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