

# YouTube Channel Integration in Teaching Science and Pupils' Academic Performance

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**Abstract.** The study was conducted to compare the pupils' academic performance in science who are exposed to a YouTube channel in the first and second quarters of the school year. The study employed a mixed-methods sequential explanatory design, where forty-five (45) Grade-VI pupils were selected using a convenience sampling method. To analyze and interpret data, the study used descriptive statistics and the t-test Paired Two Sample for Means for quantitative data. In contrast, for qualitative data, the study adopted Colaizzi's 1978 method of data analysis. The study revealed that the academic performance of the pupils in the first quarter was at a proficient and advanced level in the second quarter. Furthermore, the study discovered that the p-value is 0.03, less than the 0.5 level of significance, which shows that there is a significant difference in academic performance between the first and second quarters using the YouTube channel. Meanwhile, themes emerged on how pupils perceived the use of videos as engaging and motivating. Additionally, themes such as uniformity of instruction and internet fluctuation emerged as challenges encountered using the YouTube channel. It is recommended that teachers adopt the intervention since it is found effective not just in science but in other subject areas, and attend seminars and training on differentiated and ICT integration to address the gaps in learning.

**Keywords:** Academic performance; Science learning; Technology-aided instruction; Youtube channel

## 1.0 Introduction

Technology integration in the delivery of instruction paved the way for creating an interactive and engaging learning environment geared to achieve better learning outcomes. We are now in the digital era where traditional methods of teaching are no longer suited to the needs of the learners because teaching methodologies must tailor to the diverse needs and interests of the learners (Alessa and Hussein, 2023). It can be inferred from the study that technology has become an integral part of the educational process, and it plays a pivotal role in achieving better learning outcomes.

The Department of Education (DepEd) highlights ICT integration in the teaching-learning process, as evidenced by the indicators in the classroom observation tool of the teachers. The ICT Integration based on item 15.4 (21st Century Skills and ICT Integration in Instruction and Assessment) of DepEd Order No. 35, s. 2016 aimed to enhance teaching and learning through interactive classroom instructions across subject areas. This implies that teachers must integrate ICT as a digital tool for learning and use various tools such as websites that can help in improving the academic performance of the learners. One of the examples of websites that are used today as a learning tool in teaching is YouTube. According to Caratiquit (2022), YouTube video tutorials are considered highly effective tools for learning general and computer skills. The content is employed and integrated into a multimedia application that reflects applying skills and renderings, leading to a deeper understanding. In a mile state, integrating technology-aided instruction creates an interactive space that can lead to a better and deeper

understanding of the lessons across subject areas such as science.

Science is one of the core academic subjects at the elementary level. This required profound knowledge and expertise by the teacher and his/her ability to integrate innovative teaching strategies to help carry out the learning competencies at the end of the lesson. Hence, teachers must know how to present the lesson creatively and engagingly to come up with better learning outcomes with the help of technology-aided instruction. Research in science classrooms indicates that the use of technology has a positive influence on a wide variety of student learning outcomes, including understanding of science concepts and the development of scientific reasoning skills (Dani & Koenig, 2019). This implies that when a teacher incorporates various technological trends into the teaching-learning process, this can foster change and improve academic performance. However, if teachers opt to use traditional methods in teaching without ICT integration, there will be gaps in learning and the learning competencies will not be realized. According to Zai et al. (2020), traditional teaching methods have been found to have limitations when it comes to teaching science effectively. Research suggests that traditional teaching may not adequately prepare students for real-world applications, leading to unsatisfactory performance in fields like health sciences. Additionally, a comparative study highlighted that students generally perceive traditional offline teaching methods to be superior in terms of overall teaching experience and learning outcomes compared to online approaches, especially in the medical field. Conversely, an experimental study demonstrated that interactive teaching methods significantly improved science learning outcomes compared to traditional lecture-based methods.

Moreover, the recent global issue in education faced by our country where the Philippines has a constant low placement in the consecutive rankings as shown by the result of the 2022 Program for International Student Assessment (PISA) in which our country ranked 77th out of 81 countries worldwide in Mathematics, Science and reading comprehension calls our DepEd officials and school leaders to implement programs and projects that will bridge the learning gaps. The consecutive low ranking of the Philippines in academic subjects, including Science, calls for teachers to integrate innovative teaching approaches that will help improve the academic performance of the learners, especially in science. Although PISA is an international assessment that assesses the competency of high school students, there is still a need to consider the foundation of learning that was acquired during the primary level.

Furthermore, the low MPS score of Grade VI learners (84%) in science during the 4th Quarter examination last school year 2023-2024, based on the CMSS, is indicative data that requires teachers' immediate intervention to bridge the gap in learning, particularly in science subjects. It is believed that integrating new trends in education using online platforms for learning, such as TikTok and YouTube, helps improve the academic performance of the learners in science. Meanwhile, Camp Evangelista Elementary School scored low during the 2023 Division Achievement Test, with an MPS of 20.66, and science is one of the subjects. Thus, this requires an intervention strategy in teaching science to improve the school's performance in the national rating. In fact, according to the study of Saeed (2021), many educators are creating their content using these platforms to deliver quality education accessible to all. For instance, YouTube and TikTok have gained increasing recognition as social media platforms to support online knowledge acquisition, sharing, and application in the medical field. Results have shown that both YouTube and TikTok are affected by Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), personal innovativeness, flow theory, and content richness. Both social media networks provide up-to-date sources described as practical, enjoyable, and relevant. In a mile state, these platforms have a significant impact on the teaching and learning process when being used innovatively. The fact that teachers are creating content right now, and even learners, suggests that we can maximize this platform to generate better results in the educational aspect. This could foster a transformative impact not just for learners but also for the Department of Education in general.

The study aims to compare the academic performance of learners in teaching Science using a YouTube channel and teaching Science without traditional methods. Furthermore, to explore the depth and breadth of the learners' responses, the study aims to determine the perceptions and challenges of the learners towards the teaching interventions, both the YouTube channel and the traditional method of teaching. The researcher believes that conducting this study would address the low academic performance of the learners in science, as indicated by international ratings, and improve the school's performance in the National Achievement Test (NAT). The researcher foresees that this contributes significantly to providing quality education that every Filipino learner deserves. This is parallel to the implementation of the MATATAG curriculum, where teachers must display resiliency, especially in embracing globalization towards teaching methodologies and techniques, which means

embracing global trends in teaching through the adaptation of the product of invention and innovation, and promote inclusivity-recognizing the individual differences and multiple intelligences of the learners in the world of teaching and learning.

## **2.0 Methodology**

### **2.1 Research Design**

The study utilized a mixed-method research design, which employs both quantitative and qualitative data. Specifically, it used an explanatory sequential mixed method approach in which data will be gathered in two phases. The first phase is quantitative, preceded by the qualitative, to further explain the result of the numeric findings. Furthermore, qualitative data will be gathered using polyangulation, such as interviews and Focus Group Discussion (FGD). According to Creswell et al. (2003), the purpose of an explanatory sequential design is to explain and interpret numerical findings. This research design suits this study since the data will be generated from both quantitative and qualitative methods to allow the researcher to widen his inquiry with sufficient depth and breadth on the exploration of the perceptions of the journalists, as well as challenges and outcomes in the implementation of special programs in journalism. The quantitative data will be gathered using an adopted and modified survey questionnaire, preceded by qualitative data inquiry using data triangulation, which implies the use of multiple data sources such as interviews and Focus Group Discussion (FGD) among journalists. To analyze and interpret the results, the study employed descriptive statistics, including weighted mean and standard deviation, and adopted Colaizzi's 1978 method of data analysis. The results of quantitative findings will be further explained through qualitative data to delve deeper into the responses of the respondents.

### **2.2 Research Local**

The study was carried out in Camp Evangelista Elementary School, West-II District, Division of Cagayan de Oro City, Region 10. It is one of the public schools in the city of Cagayan de Oro, which offers complete basic education from Kindergarten to Grade Six. It is located in Barangay Patag, inside the 4th Infantry Division of the Philippine Army. The school is considered a medium school with an average enrollment of 1,300 to 1,600 per year.

### **2.3 Research Participants**

The study is composed of forty-five (45) pupil respondents chosen through a convenience sampling method. According to Golzar and Tajik (2024), a convenient sampling method is a non-probability sampling technique that is a way of selecting participants from the target population based on ease of access. Additionally, convenience sampling involves using respondents who are “convenient” to the researcher. This method suits this study since all participants were chosen in one section, where twenty-seven (27) or 60% of them are males, and eighteen (18) or 40% of them are females.

### **2.4 Research Instrument**

This study used test questionnaires intended for two quarter exams that are prescribed by the Department of Education, Division of Cagayan de Oro City. The tools have already undergone validity and reliability before it was distributed to the schools. Meanwhile, for the qualitative data, the study utilized a semi-structured questionnaire, which allowed the respondents to provide detailed answers without time restrictions to explore and discover a range of answers and determine a common theme. For the chosen respondents who will undergo the interview and the Focus Group Discussion.

### **2.5 Data Gathering Procedure**

The data were collected at the end of the first and second quarter exams. During the first quarter, the pupils were exposed to a YouTube channel in teaching Science. At the end of the quarter, their grades will be collected. Then, a follow-up interview and Focus Group Discussion were conducted using semi-structured interview questions to determine their perceptions and challenges in learning science through the YouTube channel. During the second quarter, the pupils were still exposed to the YouTube channel; however, the challenges and gaps in the first quarter will be considered to improve the implementation of the teaching intervention. During the examination, the study adopted test questions provided by the Division of Cagayan de Oro City, which have already undergone validation. After the second quarter exam, the respondents' grades were collected and subject to analysis and interpretation.

## 2.6 Ethical Considerations

Part of the preliminary preparation prior to the conduct of the study was securing permission from the school principal and the Schools Division Research Committee (SDRC) through a letter of consent. After the approval, the authors sent a letter of consent to the parents of the respondents. To ensure full support and cooperation, an orientation will be conducted with the learners, parents, and school head following the DepEd Order No. 026 s: 2021 or the Research Management Guidelines in the New Normal. Ethical considerations in the conducting of the study, such as non-disclosure of data in adherence to the Data Privacy Act of 2012, were strictly observed.

## 3.0 Results and Discussion

### 3.1 Level of Pupils' Academic Performance in Science in Quarter 1 using the YouTube Channel

Table 1 shows the level of pupils' academic performance in science in the first quarter using the YouTube channel. It can be gleaned from the table that the overall weighted mean is 88.55%, which means that the pupils' academic performance had reached a proficient level. Based on DepEd Order No. 73, s. In 2012, the Guidelines on the Assessment and Rating of Learning Outcomes under the K to 12 Basic Education Curriculum were established. Students at this level have developed the fundamental knowledge and skills, and core understandings, and can transfer them independently through authentic performance tasks. This further implies that learners in this level already possess the knowledge and skills; however, there is still a need to work on mastery of the competency using authentic performance tasks. Perhaps, when learners are tasked with applying their knowledge of homogenous and heterogeneous mixtures in science, this means they can demonstrate competency. However, it will be further improved with the help of performance tasks. In a mile state, learners in this level have not yet reached the advanced level, which means that teachers need to reinforce various activities, such as performance tasks, to help them master the competencies.

**Table 1.** *Level of Pupils' Academic Performance in Science in Quarter 1 (S.Y. 2024-2025)*

| Grading Scale | Frequency | Weighted Mean | Percentage  | Level of Academic Performance |
|---------------|-----------|---------------|-------------|-------------------------------|
| 90-100        | 8         |               | 18%         | Advanced                      |
| 85-89         | 12        |               | 27%         | Proficient                    |
| 80-84         | 15        |               | 33%         | Approaching Proficiency       |
| 75-79         | 9         |               | 20%         | Developing                    |
| Below 75      | 1         | 88.55%        | 2%          | Beginning                     |
| <b>Total</b>  | <b>45</b> | <b>88.55%</b> | <b>100%</b> | <b>Proficient</b>             |

Legend: 90-100 Outstanding      80-84 Satisfactory      75-79 Fairly Satisfactory  
85-89 Very Satisfactory      75 Below Did not Meet Expectations

The study of Mohammed and Ogar (2023) found that instruction using YouTube videos is more effective in teaching, with a statistically significant difference in the performance and retention of students who were exposed to YouTube videos. It can be inferred that the YouTube channel helps improve the academic performance of the learners. In contrast to the instruction without the integration of the YouTube channel, the pupils will not find it interesting; thus, they will get low scores and poor academic performance. Supported by the study of Breslyn and Green (2022), which compared the use of textbooks and other elements of the science learning ecosystem, online science videos are relatively new to the field of science education. While there are challenges in studying video use, videos also provide a window into what students choose to learn from when able.

Additionally, the study by Farooq, Qadir, and Sahid (2022) demonstrates that discussion and demonstration teaching methods significantly outperform passive and teacher-centered lecture methods, and that teaching styles have a significant impact on students' academic progress. This implies that the lecture method fosters less engagement in the teaching-learning process, thus failing to achieve competency in learning. Therefore, teachers should deviate from traditional teaching methods and adopt current trends in teaching science, such as utilizing YouTube channels.

### 3.2 Perception of the Pupils Towards Using the YouTube Channel in Teaching Science

Table 2 depicts the perception of the pupils regarding the use of the YouTube channel in teaching science. Based on the table, learners' perceptions of using a YouTube channel have explored two primary themes arising from pupils' responses: engaging and motivating. The emergent themes imply that the application of the e-learning websites has a positive impact on the academic performance of the pupils since they are engaged and motivated to learn.

**Table 2.** *Thematic Analysis on the Perception of the Pupils Towards the Integration of the YouTube Channel in Teaching Science*

| Themes     | Sample Supporting Significant Statements                                                                                                                                  |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Engaging   | "I find it engaging because I like to see videos on TV rather than learning and reading from the books." P7                                                               |
|            | "I sometimes felt science a boring subject; however, with the integration of a YouTube channel, it always ignites my passion and awakens my mind to learn new things." P8 |
|            | "It helps me focus and sustain my attention span in learning." P6                                                                                                         |
| Motivating | "I find it as my new motivation drive to listen and to focus on the lesson taught so I can understand its concept." P5                                                    |
|            | "I find myself excited and eager to learn when my teacher uses technology websites like YouTube." P1                                                                      |
|            | "It makes me more motivated." P3                                                                                                                                          |

**Engaging.** It is in this light that the integration of technology in the learning setting may be cited as an impetus to motivation. Therefore, according to this theme, boosting the outcomes of learning could be remarkably achieved through the introduction of engagement resources that meet the preferences of students. This thematic analysis shows that YouTube channel-assisted instruction in the Science classroom makes all the difference in student perceptions, making learning fun and motivating. Indicators suggested improved educational experience using multimedia tools, which may lead to better academic performance and a better attitude toward science. According to learner 7, *"I find it engaging because I like to see videos on TV rather than learning and reading from the books."* It can be inferred that through a YouTube channel, it can help learners to be engaged in the class and achieve positive learning outcomes. On the same note, the study of Maziriri, Chuchu, and Gapa (2020) states that the use of YouTube in a formal learning environment was positively received. Furthermore, the relationship between student attitudes towards the use of YouTube and behavioral intentions was notably strong, possibly suggesting that this e-platform is a success with student learning at the tertiary level. This implies that the integration of YouTube-assisted instruction in science helps in achieving learning goals and better learning outcomes among the learners. This fosters a positive impact specifically on the attitude of the learners towards their studies. When learners are exposed to a YouTube channel, their behavior towards their studies changes. They become more cooperative and motivated because they feel that they are engaged with various learning tasks associated with the YouTube channel.

**Motivating.** This theme implies that using a YouTube channel in teaching science is motivating. As manifested by learner 1, *"I find myself excited and eager to learn when my teacher uses technology websites like YouTube."* It can be inferred that using a YouTube channel helps them become attentive and eager to learn, especially when the teachers are using websites that align with their needs and interests. Connectedly, the study of Tahmina (2023) depicts that most of the students reported that YouTube helped them to learn English vocabulary, to make learning English exciting, to comprehend the contents of YouTube videos in a straightforward manner, get relevant materials to learn English language, acquire English language better by writing down the significant points in a diary while watching videos, to develop speaking skills watching YouTube videos, and to enhance listening comprehension. Therefore, based on the findings of this study, it can be concluded that the use of YouTube has numerous positive impacts on EFL learners' English language proficiency. Additionally, Learner 5 states that *"I find it as my new motivation drive to listen and to focus on the lesson taught so I can understand its concept."* This indicates that a YouTube channel can also motivate them by focusing on the lessons taught through its new delivery style. Supported by the findings of Insorio and Macandog (2022), he results reveal that video lessons help the students understand mathematics concepts, complementing lessons on the modules. Moreover, they enjoyed watching the teacher-made videos since they saw the teacher explaining the lesson. It can be inferred that with the help of videos from YouTube, it can help learners to be active and engage in the lesson.

### 3.3 Challenges of the Pupils in Learning Science in the First Quarter with the Use of the YouTube Channel

Table 3 shows the challenges of the learners in learning science with the YouTube-assisted instruction in teaching science. Based on the data, themes emerged such as uniformity of instruction and absence of physical manipulation.

**Uniformity of Instruction.** This implies that despite YouTube being a valuable educational resource, over-reliance on it encourages students who are expected to have alternative forms of learning to disengage. According to pupil 2, *"The instruction is not differentiated without considering others who do not like watching videos on the YouTube channel."* This indicates that despite the interactive teaching strategy using a YouTube channel, the delivery of instruction is one of the challenges faced by the pupils. Additionally, it can be inferred that teachers who are using YouTube channels and educational videos in their lessons are dependent on it. Considering the various needs and interest

of the learners, they should create different activities out from the video to ensure that learners were engaged in the class discussion ensuring that the mastery of the lesson will be attained because their needs when it comes to technology application was considered and at the same time their diversity as learners were prioritized in the delivery of instruction. *“The teaching strategy is uniform, and I want varied teaching strategies; I do not like watching YouTube all the time,”* as manifested by Pupil 1. This implies that in the delivery of instructions on YouTube, teachers should modify the activities presented in the video, making it diverse to ensure that all learners are interested and engaged in the class activities. In connection with the findings of the study by Ogirima, Tolulope, and Temitope (2022), which indicate that using YouTube websites enhances the effectiveness of finding relevant information about a concept and increases productivity within the shortest time frame.

**Table 3.** Challenges of the Pupils in Learning Science in the First Quarter with the Use of a YouTube Channel

| Themes                           | Sample Supporting Significant Statements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Uniformity of Instruction</b> | <p>“I found it challenging because I am into watching videos at home, because I have my phone, and I do not want that in school, I will be watching videos again.” P3</p> <p>“The instruction is not differentiated without considering others who do not like watching videos on the YouTube channel.” P2</p> <p>“The teaching strategy is uniform, and I want varied teaching strategies; I do not like watching YouTube all the time.” P1</p> <p>“Using a YouTube channel in teaching science is good; however, factors like low internet connection hamper the teaching and learning engagement.” P6</p> |
| <b>Internet Fluctuation</b>      | <p>“I want to experience learning with the application of a YouTube channel with no internet interference because without internet, my teacher will go back to using books.” P9</p> <p>“Sometimes it is boring, especially when the internet is fluctuating.” P8</p>                                                                                                                                                                                                                                                                                                                                         |

**Internet Fluctuation.** The slow internet connection in the school appeared to be one of the themes that emerged in the challenges of the pupils in learning using the YouTube channel. This postulates that the lack of internet connectivity can cause a delay in the delivery of instruction, which affects learning. As manifested by pupil 8, *“Sometimes it is boring, especially when the internet is fluctuating.”* It can be inferred that slow internet makes the lesson boring since the teachers' lesson flow relies on YouTube videos. This aligns with the study of Amponsah et.al. (2022) that internet access influences academic standards among students, as those with internet access have shown a higher improvement in academic performance than those without. Different internet use, on the other hand, has an impact on academic performance, as revealed by the results. Similarly, the presence of several sources of internet connectivity does not guarantee immediate access to all of them. It can be inferred that if the internet connectivity is low, it directly affects the delivery of the lesson, especially when the teacher is using video lessons. As a result, the academic performance of the pupils will be affected.

Additionally, pupil 9 said that *“I want to experience learning with the application of a YouTube channel with no internet interference because without internet, my teacher will go back to using books.”* This denotes that when the internet connection is fluctuating, teachers will go back to the traditional method of teaching, just like using books and lecture methods, which learners described as boring. According to Yeh and Tsai (2022), both teachers and students are suffering from unstable or limited internet connectivity, which directly hinders students' rights in the massive online education. Some learners are experiencing videoconferencing fatigue and struggling with overwhelming resources and excessive technology time. This study also identifies a group of forgotten learners, the videoconferencing refugees, who have limited access to the Internet and lost their learning opportunities. This finding suggests that the lack of internet connectivity and slow internet connection can impede learning, and this should be addressed to promote accessible education.

### 3.4 Level of Pupils' Academic Performance in Science in Quarter 2 using the YouTube Channel

Table 4 depicts the level of pupils' academic performance in science during the second quarter using the YouTube channel. It can be gleaned from the table that the weighted average mean is 90.23%, which implies that learners who are exposed to the YouTube channel have reached an advanced level. The integration of YouTube channels helps improve the academic performance of learners, enabling them to perform learning competently. It can be inferred from the data that there is an increasing trend in the academic performance of the pupils compared to the control group. According to DepEd Order No. 73, s. 2012, Guidelines on the Assessment and Rating of Learning Outcomes under the K to 12 Basic Education Curriculum state that students at this level exceed core requirements in terms of knowledge, skills, and understandings and can transfer them automatically and flexibly through authentic performance tasks. This implies that with the help of a YouTube channel, learners can learn

independently, where they can develop competency and transfer their learning through authentic tasks with ease and mastery.

This is in connection to the study conducted by Pratama, Arifin, and Widianingsih (2020) that learning through video in teaching listening has a significant effect on helping students understand the content or occasion about the material that students learn. Teachers cannot leave YouTube outside the educational process, as it offers all the advantages of having a more valuable and sensational teaching experience. YouTube videos should be contemporaneously fundamental and an expanded part of the learning process. Students find the use of YouTube videos delightful. Such videos enhance the understanding of the academic materials and develop the presentation skills of the students. In a mile state, with the help of video lessons, children can learn more deeply than by reading books. Additionally, the study of Almuslamani et al. (2020) states that the use of educational videos has a direct and positive effect on student participation in the classroom. This effect is increased when the students are allowed to select the videos for themselves. It was shown clearly that the students were encouraged to participate actively by asking questions, giving opinions, and discussing the related topics in the lectures. In addition, the students were motivated by these videos to participate passively in the classroom by writing notes, sitting quietly, and listening to the lecturer. The study postulates the effectiveness of using video lessons on a YouTube channel on the learning performance of children.

**Table 4.** *Level of Pupils' Academic Performance in Science in Quarter 2 using YouTube Channel*

| Grading Scale                                                                                                                                  | Frequency | Weighted Mean | Percentage | Level of Academic Performance |
|------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------|------------|-------------------------------|
| 90-100                                                                                                                                         | 28        | 90.23 %       | 63%        | Advanced                      |
| 85-89                                                                                                                                          | 10        |               | 22%        | Proficient                    |
| 80-84                                                                                                                                          | 5         |               | 11%        | Approaching Proficiency       |
| 75-79                                                                                                                                          | 2         |               | 4%         | Developing                    |
| 75 Below                                                                                                                                       | 0         |               | 0%         | Beginning                     |
| Total                                                                                                                                          | 45        | 90.23%        | 100%       | Advanced                      |
| Legend: 90-100 Outstanding<br>85-89 Very Satisfactory<br>80-84 Satisfactory<br>75-79 Fairly Satisfactory<br>75 Below Did not Meet Expectations |           |               |            |                               |

### 3.5 Summary of Academic Performance Between the First and Second Quarters using the YouTube Channel

Table 5 summarizes the academic performance of the learners in science during the first quarter of the SY 2024-2025. It can be seen from the table that the pupils during the first quarter acquired an average grade of 88.55% which means that they have reached a proficient level. Meanwhile, in the second quarter, learners achieved an average grade of 90.23%, indicating that they had reached the advanced level. Comparing the academic performance between the two phases of implementation within the first quarter and second quarter period shows an increasing trend of academic performance of the learners in science which is an indicative that learners, when exposed to videos from the YouTube channel helps improve their academic performance, which mirrors on the quality of education they get out from the learning intervention.

**Table 5.** *Summary of Academic Performance between the First and Second Quarters using the YouTube channel Quarters*

| Variables                                                                                                                                            | Mean   | Variance | Level of Academic Performance |
|------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------|-------------------------------|
| First Quarter                                                                                                                                        | 88.55% | 26.23    | Proficient                    |
| Second Quarter                                                                                                                                       | 90.23% | 24.55    | Advanced                      |
| Legend: 90-100 Outstanding      80-84 Satisfactory      75-79 Fairly Satisfactory<br>85-89 Very Satisfactory      75 Below Did not Meet Expectations |        |          |                               |

Furthermore, it implies that the average score indicates that the students who have learned with the YouTube channel performed well based on their academic performance within the two quarters. On the same line, the study of Saatera et al. (2023) cited that YouTube has been a great alternative and a source of information that students can utilize despite the absence of teachers. With all the tutorials and lessons available on YouTube, students can now learn everything they need to know. However, the company of teachers still needs to be available in the teaching and learning process because not all students are born independent learners.

### 3.6 Difference in the Academic Performance of the Pupils in Science using the YouTube Channel between First and Second Quarters

Table 6 depicts the difference in the academic performance of the pupils in the first quarter between teaching with YouTube-assisted instruction and without YouTube-assisted instruction. The table shows that the probability value (p-value) is 0.03 less than the 0.5 level of significance, which means that there is a significant difference in integrating the YouTube channel in teaching science within the first and second phases of implementation of the



teaching intervention. This result implies that teaching science with the use of technology, such as a YouTube channel, can enhance the learners' academic performance and improve learning compared to traditional teaching methods. The study by Koto (2022) supports the idea that integrating YouTube videos into the learning process enhances students' engagement and participation in various learning activities.

**Table 6.** *Test of Significant Difference of the Academic Performance in Science Between the First and Second Quarters using YouTube Channel*

| Variables                                 | P-value | Decision                           |
|-------------------------------------------|---------|------------------------------------|
| YouTube Integration in the First Quarter  | 0.03    | Reject Ho                          |
| YouTube Integration in the Second Quarter |         | There is a significant difference. |

@0.05 Level of Significance

## 4.0 Conclusion

The advent of technology nowadays is beneficial not just in personal life but also in the field of education. When you are bringing technology into the teaching and learning process, it can help carry out the competencies of the lesson, which leads towards mastery of the subject matter. The study shows that the intervention is significant for teaching and learning due to the impact that technology can have on the learners. A study shows that learners became more engaged and motivated to learn in science lessons with the help of a YouTube channel, and this is evident in their academic performance, which shows an increasing trend that explains the significance of YouTube. However, integrating technology in the lesson, such as the YouTube channel, has its corresponding pros and cons. The diversity of the learners should be considered along with their needs and interests to sustain their attention and eagerness to learn. Findings revealed challenges encountered by the learners, as shown by the themes that emerged, such as uniformity of instruction and internet fluctuation, which should also be addressed. This means that when using technology-aided instruction, teachers should consider that there are learners who do not like purely technology, considering that there are three domains of learning, which are cognitive, affective, and psychomotor. These needs must be considered by teachers in integrating technology into the teaching-learning process.

Therefore, it is recommended that future researchers adopt the same strategy in teaching science because it is found to be effective, but consider exploring the intervention towards other subject areas. Meanwhile, considering the challenges that emerged in the study, future researchers may adopt the same study but address these challenges by implementing interventions to improve the learning process. This could involve developing strategies that leverage the learning tool to increase learner engagement. Future researchers may use the same study but apply it at the primary level to determine if it yields the same result. Furthermore, professional development, such as attending trainings and seminars related to various teaching strategies, can be provided to learners using digital tools to ensure learning satisfaction and better learning outcomes.

## 5.0 Contributions of Authors

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## 7.0 Conflict of Interests

The author certifies that there are no financial, personal, or professional conflicts of interest that could have influenced the research or its findings.

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