

# Enhancing the Level of Computational Skills of Grade 11 Learners on Variance Using Facebook Classroom

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**Abstract:** This study explored the effectiveness of using Facebook Classroom to enhance the computational skills of Grade 11 learners in statistics, specifically focusing on the concept of variance. Conducted at Don Eulogio de Guzman Memorial National High School during the SY 2023-2024, the research involved 40 students divided into experimental and control groups. The experimental group utilized Facebook Classroom for hybrid learning, while the control group followed traditional methods. Pretest and posttest assessments showed significant improvements in both groups, with the experimental group achieving a mean gain of 3.25 in computational skills on variance. Statistical analysis confirmed the superior effectiveness of Facebook Classroom in fostering these skills, demonstrating its potential as a powerful tool for hybrid learning environments.

**Keywords:** Computational Skills, Facebook Classroom, Hybrid Learning, Variance.

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## I. INTRODUCTION

In the ever-evolving landscape of education, the integration of technology has become a catalyst for transformative learning experiences. As we navigate the complexities of the 21st century, the amalgamation of virtual and physical learning environments has given rise to the concept of hybrid learning (Eyal, 2022). At the forefront of this educational revolution is the ubiquitous social media giant, Facebook, whose vast reach, and dynamic features make it an ideal platform for fostering collaborative and interactive learning experiences. This paradigm shift necessitates a comprehensive exploration of how Facebook can be harnessed to empower the classroom for hybrid learning. This research delves into the multifaceted dimensions of this innovative approach, examining the potential of Facebook to bridge the gap between traditional and digital education. By leveraging the social connectivity, multimedia capabilities, and user-friendly interface of Facebook, educators and students alike stand poised at the brink of a new era in education—one that transcends the constraints of physical spaces and embraces the boundless possibilities of a hybrid learning model (Chee, 2023).

At the heart of the study is the concept of empowerment—how Facebook can empower both educators and learners in the pursuit of knowledge. With over two

billion monthly active users, Facebook stands as a global hub of connectivity, providing a platform that transcends geographical boundaries. Harnessing this expansive network, educators can create a virtual classroom that goes beyond the limitations of brick-and-mortar walls. Through the establishment of Facebook groups and pages dedicated to specific courses or subjects, educators can cultivate an online space where students can engage in discussions, share resources, and collaborate on projects. This level of connectivity not only facilitates seamless communication but also nurtures a sense of community among learners, fostering an environment where knowledge exchange becomes a collective endeavor (Mustafayev, 2023).

Furthermore, Facebook's multimedia capabilities amplify the educational experience by allowing for the integration of diverse content formats. From live video sessions and recorded lectures to interactive quizzes and multimedia presentations, the platform accommodates a plethora of teaching tools. This versatility enables educators to cater to varied learning styles, ensuring that the educational content is not only informative but also engaging. The visual and interactive nature of multimedia content on Facebook adds a layer of dynamism to the learning process, transforming it into a visually rich and interactive experience. Empowering educators with the ability to curate and present content in diverse formats,

Facebook becomes a canvas for innovation in teaching methods.

In the context of hybrid learning, the asynchronous nature of Facebook communication becomes a cornerstone for flexibility. As students engage with course materials and discussions at their own pace, the temporal constraints of traditional classrooms dissipate. This asynchronous communication model accommodates the diverse schedules of learners, whether they are pursuing education alongside work commitments or navigating different time zones (Farley, 2023). By fostering a flexible learning environment, Facebook empowers students to take control of their educational journey,

The integration of Facebook into the realm of hybrid learning holds the potential to revolutionize the landscape of education. The platform's expansive reach, multimedia capabilities, asynchronous communication, and gamification features collectively contribute to the empowerment of both educators and learners. As we navigate the uncharted waters of the 21st century, it is imperative to recognize the transformative power of Facebook in redefining the dynamics of the modern classroom. The synergy between traditional and digital education, facilitated by the innovative use of Facebook, paves the way for a future where learning knows no bounds—a future where empowerment is not just a concept but a tangible reality in the journey of knowledge acquisition.

For these reasons, the researcher found a way to help the students using facebook classroom to supplement face-to-face class instructions. Therefore, to make this a reality, the researcher resolved to conduct action research on how effective facebook classroom to enhance the computational skills of Grade 11 learners in Statistics particularly the learning competency for variance.

## II. RESEARCH QUESTIONS

This study aimed to enhance the level of computational skills on variance of Grade 11 learners of Don Eulogio de Guzman Memorial National High School for school year 2023 - 2024 using Facebook classroom.

➤ *Specifically, the Study Sought to Answer the Following Questions:*

- What is the level of computational skills on variance of Grade 11 learners in the pretest and posttest?
- Is there a significant difference in the level of computational skills on variance of Grade 11 learners in the pretest and posttest?

- What is the mean gain of the level of computational skills on variance of Grade 11 learners?

## III. METHODOLOGY

### A. Research Design

This study employed two-group pretest–posttest quasi-experimental design. A two-group pretest–posttest quasi-experimental design is a research design where two groups are compared before and after an intervention. In this design, one group receives the intervention (treatment group) while the other does not (control group). Both groups are tested on the dependent variable before the intervention (pretest) and after the intervention (posttest). This allows researchers to observe the effects of the intervention by comparing the changes in both groups (Harris, 2019).

### B. Participants

Forty (40) high school learners from Grade 11-Thales and 11-Locke classes of Don Eulogio de Guzman Memorial National High School SY 2023 – 2024 were taken as participants in this study. Each class with 20 learners was grouped accordingly. Grade 11-Thales was assigned as experimental group while Grade 11-Locke was assigned as control group. The participants were chosen using purposive sampling based on the criteria of having a mobile phone and an internet connection.

### C. Intervention

The implementation of Facebook Classroom offers a unique opportunity to create a cohesive and engaging hybrid learning environment. By leveraging the familiarity of the Facebook platform, the researcher aims to provide students with a seamless educational experience that combines the best of virtual and in-person learning. In response to the evolving educational landscape and the need for flexible learning solutions, the researcher proposed the integration of a customized "Facebook Classroom" for the teaching of statistics in a hybrid learning environment. This innovative approach aims to leverage the familiarity and accessibility of the Facebook platform to create an engaging and collaborative space for both virtual and in-person learning experiences.

Statistics, as a subject, benefits greatly from visual aids, real-world applications, and collaborative learning. Facebook Classroom, with its multimedia capabilities and social interaction features, can significantly enhance the teaching and learning of statistics. This intervention incorporated statistics module, video lesson and assessment within the Facebook Classroom framework.

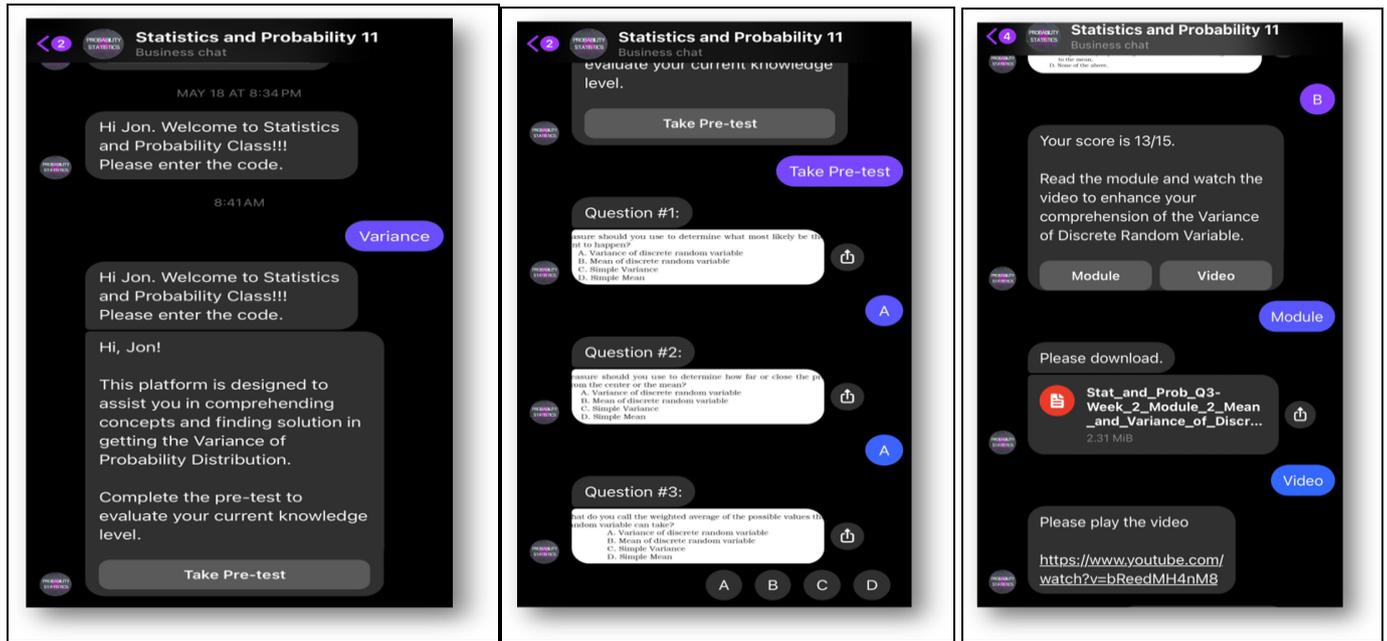


Fig 1: Intervention

**D. Instrumentation and Data Collection**

The pretest/posttest instrument was adopted in the self-learning module Statistics and Probability Quarter 3 – Week 2 - Module by Remedios D. Labiano.

Before the intervention, a pretest was administered to all participants. During the intervention, the experimental group used Facebook Classroom, while the control group followed a traditional approach. After the intervention, a posttest was administered to assess the outcomes.

**E. Data Analysis**

Percentage score was used to determine the level of mastery of the participants in the pretest and posttest.

Furthermore, to determine the effectiveness of the intervention, the researcher used the t – test for the comparison of the performance of the participants in the pretest and posttest.

**IV. RESULTS AND DISCUSSION**

**A. Level of Computational Skills on Variance of Grade 11 Learners in the Pretest and Posttest**

Table 1: Pretest Results of the Participants

Participants	Pretest	
	Experimental Group	Control Group
Mean	4.35	4.05
Standard Deviation	1.66	2.04
% of Mastery	29.00%	27.00%
Descriptive Rating	Low Mastery	Low Mastery

Table 1 shows level of computational skills on variance of Grade 11 learners in the pretest. In the pretest administered to both the experimental and control groups with the results indicate relatively low performance across both groups. The experimental group had a mean score of 4.35 with a standard deviation of 1.66, while the control group had a mean score of 4.05 with a higher standard deviation of 2.04.

The pretest administered to both the experimental and control groups indicates relatively low performance across both groups indicating that the participants generally struggled with the pretest content, and there was little variation in performance within the experimental group compared to the control group.

Table 2: Post Test Results of the Participants

Participants	Posttest	
	Experimental Group	Control Group
Mean	13.05	9.80
Standard Deviation	1.73	1.61
% of Mastery	87.00%	65.33%
Descriptive Rating	Closely Approximating Mastery	Moving Toward Mastery

Table 2 shows the level of computational skills on variance of Grade 11 learners in the posttest. The experimental group achieved a mean score of 13.05 with a standard deviation of 1.73, and 87.00% of participants reached a level of mastery. In contrast, the control group had a mean score of 9.80 with a standard deviation of 1.61. Here, 65.33% of participants achieved mastery, resulting in a descriptive rating of "moving toward mastery."

The posttest administered after the intervention, the experimental group utilized Facebook Classroom, while the control group employed traditional methods. The experimental group received a descriptive rating of "closely approximating mastery," indicating that most participants performed very well and were close to fully mastering the content. In contrast, the control group achieved mastery, resulting in a descriptive rating of "moving toward mastery." This suggests that while the control group also showed improvement, their progress was not as pronounced as that of the experimental group.

*B. Comparison of the Level Level of Computational Skills on Variance of Grade 11 Learners in the Pretest and Posttest*

Table 3: t-Test for the Pretest of Experimental and Control Groups

Pretest	Experimental Group	Control Group
Mean	4.35	4.05
Variance	2.76579	4.15526
Observations	20	20
t stat	0.50998	
P(T<=t) two-tail	0.61302	
t Critical two-tail	2.02434	

Table 3 presents the comparison of the pretest scores for computational skills between the experimental and control groups of Grade 11 learners which reveals no significant difference in their initial performance levels.

The comparison of the pretest scores for computational skills between the experimental and control groups of Grade 11 learners which reveals no significant difference in their initial performance levels. This indicates that there is no statistically significant difference between the pretest scores of the experimental and control groups, suggesting that both groups had similar levels of computational skills before the intervention.

Table 4: t-Test for the Pretest and Post Test of Experimental Group

<b>Experimental Group</b>	<b>Pretest</b>	<b>Posttest</b>
Mean	4.35	13.05
Variance	2.76579	2.99737
Observations	20	20
t stat	-22.62262	
P(T<=t) two-tail	0.00000	
t Critical two-tail	2.09302	

Table 4 presents the comparison of the pretest and posttest scores for the experimental group, which used Facebook Classroom as an intervention, shows a significant improvement in their computational skills.

The comparison of the pretest and posttest scores for the experimental group, which used Facebook Classroom as

an intervention, shows a significant improvement in their computational skills. This indicates that the improvement in scores is highly significant. Therefore, the intervention using Facebook Classroom was extremely effective in enhancing the computational skills of Grade 11 learners in the experimental group.

Table 5: t-Test for the Pretest and Post Test of Control Group

<b>Control Group</b>	<b>Pretest</b>	<b>Posttest</b>
Mean	4.05	9.80
Variance	4.15526	2.58947
Observations	20	20
t stat	-11.57641	
P(T<=t) two-tail	0.00000	
t Critical two-tail	2.09302	

Table 5 presents the comparison of the pretest and posttest scores for the control group, which used traditional methods, demonstrates a significant improvement in their computational skills.

The comparison of the pretest and posttest scores for the control group, which used traditional methods,

demonstrates a significant improvement in their computational skills. This indicates that the improvement in scores is highly significant. Therefore, traditional methods were effective in enhancing the computational skills of Grade 11 learners in the control group.

Table 6: t-Test for the Post Test of Experimental and Control Groups

<b>Posttest</b>	<b>Experimental Group</b>	<b>Control Group</b>
Mean	13.05	9.80
Variance	2.99737	2.58947
Observations	20	20
t stat	6.14915	
P(T<=t) two-tail	0.00000	
t Critical two-tail	2.02439	

Table 6 presents the comparison of the posttest scores for the experimental group, which used Facebook Classroom as an intervention, and the control group, which used traditional methods, reveals a significant difference in the level of computational skills between the two groups.

The comparison of the posttest scores for the experimental group, which used Facebook Classroom as an intervention, and the control group, which used traditional methods, reveals a significant difference in the level of computational skills between the two groups. This indicates that the improvement in computational skills in the experimental group was significantly greater than that in the control group, highlighting the effectiveness of the Facebook Classroom intervention.

#### *C. Mean Gain of the Level of Computational Skills on Variance of Grade 11 Learners*

The study specifically measured the mean gain in the level of computational skills on variance among Grade 11 learners, which was found to be 3.25. By leveraging the familiar and accessible Facebook platform, the researcher created an engaging and collaborative space for both virtual and in-person learning. The intervention aimed to provide a seamless educational experience that responded to the need for flexible learning solutions.

## V. CONCLUSION

The study found that the experimental group, which utilized Facebook Classroom for hybrid learning, showed a dramatic improvement in computational skills on variance indicating the effectiveness of the intervention.

While both the experimental and control groups showed significant improvements in their posttest scores, the experimental group outperformed the control group. Thus, it confirmed that the improvement in the experimental group was significantly greater than that in the control group.

The experimental group not only showed significant improvement but also achieved a high level of mastery. This suggests that the Facebook Classroom intervention was highly effective in enhancing students' computational skills on variance.

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