International Journal of Multidisciplinary Research and Publications
ISSN (Online): 2581-6187

Vlogging and Students' Self-Regulated Learning Skills in Mathematics

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Abstract*—This study utilized quasi-experimental design to investigate the impact of vlogging to the self-regulated learning (SRL) skills of Grade 11 students enrolled in a Mathematics course, specifically, Statistics and Probability. The study involved two intact groups from a public school in Cagayan de Oro City, Philippines during the first semester of the school year 2021-2022. Results showed that both control and experimental groups have neutral SRL skills. This led to a no significant difference between the SRL skills of the groups. Hence it is recommended that teachers, specially those teaching Mathematics, may find interventions that may improve students' SRL skills. Moreover, while vlogging did not have effect to students' SRL skills in the context of this study, it can still be used as an effective educational tool. Lastly, this study may be replicated to a bigger scope using population from other schools to promote generalizability of the result especially that the study was conducted in the new normal.*

Keywords*—Self-regulated learning, vlogging, new normal.*

I. INTRODUCTION

Through the use of computer-generated modalities like vlogging, education initiatives in the new normal are driving the adoption of technology. Vlogging is defined as producing an online broadcast that acts as a communication tool and contains content related to a specific topic [1]. This modality has an impact on learning environments where students face challenges, especially when it comes to the effectiveness of teaching tactics in distant learning.

Additionally, when an unprecedented spectacle happened due to coronavirus disease, the hasty modification in teaching and learning is being materialized. The Covid-19 pandemic poses a greater challenge in teaching and learning. More so, the Department of Education (DepEd) in the Philippines has set forth the implementation of the new normal set-up of education through its learning continuity plan including technology integration. Magsambol [2] noted the importance of continuing education to measure the learning outcomes and performance tasks of the students.

Additionally, DepEd has offered a number of options to customize the needs of the pupils in these unique circumstances. Accordingly, learning modalities include modular, television-based, radio-based instruction, blended, and bichronous approaches [3]. On the other side, challenges are still perceptible in the implementation of the said modalities, particularly to those demotivated to learn in mathematics subject.

Magayon and Tan's [4] study also recommended that activities be tailored to the preferences of the students, that learning activities be adjusted, that students receive a range of help throughout activities, and that a variety of real-life scenarios be related to the activities. Conceptual ideas are not built one day or even two. They are developed after repeated exposure to a particular mathematical idea in various contexts [5].

In the context of conceptual understanding in distance learning, it is believed that there are still a lot of students who lack understanding of variables and equality [6]. This implies that the instructor should make a conscious effort to make connections between the material being studied now and the ideas they have previously acquired.

Over the last two international assessments that the country took part in; the Programme for International Student Assessment 2018 (PISA) and Trends in International Mathematics and Science Study 2019 (TIMMS), Philippines consistently ranked low, if not the lowest, in Mathematics. Both international assessments measured student's proficiency in math through applying conceptual understanding to solve problems.

According to Dabbagh and Kitsantas's [7] research, when teachers provide their pupils with a self-oriented framework, the intended learning outcomes are achieved. When using vlogs, students remembered concepts and knowledge [8].

Furthermore, as one of the tactics for remote teaching and learning, this modification highlights the potential for experimenting with task-based learning like vlogging. It is anticipated that students' abilities will increase by providing them with advanced vlogging stages and appropriate feedback in the form of scoring reflections, according to Maulidah [1]. Students will be encouraged to learn through images or videos through vlogging. Videos are filling the void in terms of networking, engaging, educating, and informing [9]. The vlogging was effective in raising pupils' passion for learning in the field test [10]. With capabilities of digital videos, students should no longer be expected to learn mathematical concepts and process only by sitting and listening to long explanations [11].

Given the premises stated above, this study was conducted to look into the effect of vlogging for students' conceptual understanding in mathematics in the new-normal set-up of a public school in Cagayan de Oro City. Additionally, since there is a shortage of strong study on the relationship of vlog in mathematics, the present study would like to fill in the gap.

Padilla A., Travero A., and Quirino KK, "Vlogging and Students' Self-Regulated Learning Skills in Mathematics," *International Journal of Multidisciplinary Research and Publications (IJMRAP)*, Volume 6, Issue 9, pp. 64-67, 2024.

II. METHODS

This study used quasi-experimental research design to determine the effectiveness of vlogging to student's self-regulated learning skills. To assure that the students assigned to experimental group have gadgets, internet connection and possess IT-related skills, the teacher-researcher conducted a survey regarding the matter. Those that qualify in the criteria were included in the random sampling.

This study was conducted at a public school in Cagayan de Oro City, under the supervision of Department of Education, Division of Cagayan de Oro.

The participants involved in the study were the students enrolled in Statistics and Probability in the first quarter of the second semester of the school year 2020-2021. A total of 60 students served as the participants of the study.

Due to the potentially invasive nature of vlogging, student-participants are ensured confidentiality by having all data in codes. The code E indicates a student-participant from the experimental group while code C indicates a student-participant from the controlled group. All videos submitted can be viewed by the teacher-researcher only. A Consent and Waiver form was also filled out by the parents of the participants in the experimental group.

To quantify the problems and experiences of the participants on regulating their own learning during intervention, the self-regulated learning skill questionnaire of Marchis [12] was adapted and utilized. A vlog module from University of North Carolina Wilmington online resource was also adapted.

The researchers made an informal survey to quantify the number of students who have gadgets for vlogging. As of the writing, the informal survey showed that there are 38 students who have gadgets, internet connection and possess IT-related skills. Among these, thirty (30) students were drawn which comprised the experimental group; the rest of the students, including those who do not have gadgets, served as the control group. After assigning the respondents to the groups, the researcher gave them the Self-Regulated Learning Questionnaire.

The control group utilized modular learning, specifically self-learning printed modules, as practiced by the school. On the other hand, the experimental group used vlogging. The teacher provided the outline of the topics in relation to DepEd's Most Essential Learning Competencies (MELCs) for the subject Statistics and Probability. The researchers also provided the rubric for grading the vlog. The researchers already provided an example of a vlog and conducted a pilot vlog assessment task the semester prior, and so, they already know the basics of vlogging. The students are encouraged to be creative in vlogging and to use real-life examples. Usage of Sugbuanong Binisaya, the vernacular of the locality, is not prohibited.

The course Statistics and Probability is composed of two (2) modules. Each module is composed of 10 weekly activities, meaning each module is to be done within 10 weeks. This study was implemented for the first module of the course, which translates to 10-week duration.

For the experimental group, they created a vlog for every MELC. There are 10 MELCs for the subject thus, one video per week were submitted for the same 10-week duration.

The study used Descriptive Statistics: mean and standard deviation to summarize and describe the data. Moreover, to judge whether to accept or reject the presented null hypotheses, t-test for independent means was used to analyze the data at 0.05 level of significance.

III. RESULTS AND DISCUSSIONS

A. *Students' Self-Regulated Learning*

The level of students' self-regulated learning, as used in this study, is the result of their rating score based on the given learning competencies related to Mathematics subject. This can be characterized as a cyclical process, wherein the learners set and monitor their performance. Table 1 shows the mean distribution of the level of self-regulated learning skills of students from control and experimental group.

Under the control group, the highest mean of 3.87 (SD= 1.53) interpreted as "Most of the Time" in the indicator, "If I can't solve a problem, I ask for help from a friend." This implies that the students in controlled group on most occasion have difficulty in solving math problem. Thus, collaborative learning is likewise important to improve. Remillard [13] found that in the classrooms where cooperative learning was implemented, students had academic growth in math that exceeded the national average, they built strong relationships with their classmates, and they enjoyed working in the cooperative group. Further, the indicator, "I reformulate problems in my own words" obtained the lowest mean of 2.00 (SD= 0.98) in a controlled group which interpreted as "Sometimes." This result implies that the students in controlled group occasionally reconstruct math problems through the use of their own words. Hence, it is suggested to enhance mental reasoning of students through innovative teaching strategy. Successfully solving mathematical word problems requires both mental representation skills and reading comprehension [14].

Under experimental group, the highest mean of 3.97 (SD= 1.33) interpreted as "Most of the Time" in the indicator, "Mathematics is useful in our everyday life." This indicates that the students in experimental group attest that on most occasion, learning math is useful to them. Thus, motivational support of math teacher is essential to consider. Yeh et al. [15] showed that the educational game could facilitate better learning performance and enjoyment than a conventional instructional approach.

On one hand, the lowest mean of 2.87 (SD= 1.30) interpreted as "Neutral" in the indicator, "If I can't solve a problem, I ask for help from my teacher." This result indicates that the students in experimental group rated themselves as fair in terms of problem solving. They could ask assistance from their teachers in doing so. Thus, teachers are encouraged to integrate innovative teaching vis-à-vis and motivational support mechanisms. Teachers claim that using various innovative strategies is essential and effective when teaching mathematics, but there are a number of obstacles that keep them from taking advantage of them. These include, but are

not limited to, the burdensome workload that requires them to finish throughout the semester, the lack of tools available to computerize classes and the teaching process in general, the lack of tangible tools to build, and the low proficiency levels of some teachers [16].

TABLE I. Level of students' self-regulated learning skills.

Indicators	Control		Experimental	
	Mean	Interpretation	Mean	Interpretation
Mathematics is useful in our everyday lives.	2.93	Neutral	3.97	Most of the Time
Mathematics will be useful in my future.	3.47	Most of the Time	3.70	Most of the Time
When I start to prepare my mathematics homework, I set goals	3.13		3.17	Neutral
I set goals for learning mathematics at the beginning of the semester	2.93	Most of the Time	3.03	Neutral
I reformulate the problem in my own words	2.00	Neutral	2.93	Neutral
When I solve a problem, I write down the given data	2.93	Sometimes	3.57	Most of the Time
After reading the text of the problem, I know if I can solve it or not	3.27	Neutral	3.20	Neutral
If I can't solve a problem, I know what my difficulty is	2.53	Neutral	3.50	Most of the Time
If I have difficulties in mathematics, I can explain what I don't understand.	3.47	Sometimes	3.07	Neutral
After I solve the problem, I know if I've solved it correctly or not.	3.20	Most of the Time	3.40	Most of the Time
If I can't solve a problem, I search for similarly worked examples.	3.13	Neutral	3.57	Most of the Time
If I can't solve a problem, I ask for help from a friend.	3.87	Neutral	2.93	Neutral
If I can't solve a problem, I ask for help from my teacher.	3.27	Most of the Time	2.80	Neutral
While solving a problem, I ask questions which help me to concentrate on the problem.	3.00	Neutral	3.43	Most of the Time
After I solve the problem, I check if the result is correct.	3.20	Neutral	3.33	Neutral
While solving a problem, I check if I use all the data.	3.47	Neutral	3.17	Neutral
After I've solved a problem, I ask if I have learned something new.	2.73	Most of the Time	3.23	Neutral
After I've solved a problem, I search for other solutions.	3.33	Neutral	3.20	Neutral
If I had more time for practice, I would be better at mathematics.	3.27	Neutral	3.00	Neutral
No matter how much time I devout to studying mathematics, I can't improve my grades.	3.07	Neutral	2.87	Neutral
Total	**3.12**	**Neutral**	**3.25**	**Neutral**

Legend: 4.20-5.00= Always/ 3.40-4.19= Most of the Time/ 2.60-3.39=Neutral/ 1.80-2.59=Sometimes/ 1.00-1.79= Never

B. Difference between Control and Experiemental Groups' SRL

Table 2 shows the t-test result for the SRL of both experimental and control groups.

TABLE III. Comparison on the groups' self-regulated learning.

Groups	N	Mean	Standard Deviation	*t*	*p*
Control Group	30	62.20	26.17	-0.44	0.33
Experimental Group	30	65.07	24.04		

Table 2 shows that experimental group achieved higher mean as compared to the control group. The experimental group's lesser standard deviation shows that the students' scores in this group are less scattered compared to the control groups. However, the p-value of 0.33 shows that there is no significant difference between the self-regulated learning of both groups.

While the use of vlogging may be effective in various educational and professional contexts, it does not directly impact the students' self-regulated learning (SRL) skills in the specific context of the present study. However, the literature on vlogging and its effects on self-efficacy and teaching outcomes can be used to support the conclusion that vlogging does not significantly affect the experimental groups' self-regulated learning. The study by Tang [17] on the effects of vlogger race on weight loss, and the study by Hassan [18] on educational vlogs, provide valuable insights into the potential impact of vlogging on self-efficacy and learning outcomes. Additionally, the study by Tang [17] highlights the potential influence of vlogger race on perceived credibility and self-efficacy, which is relevant to the discussion of vlogging and its effects on self-regulated learning. While the present results show that vlogging does not affect the experimental groups' self-regulated learning, they provide valuable insights that can be used to contextualize the study's findings and contribute to the broader discussion on the impact of vlogging on learning and self-regulated learning.

IV. Conclusion and Recommendation

The result of the present study showed that while the experimental group had higher mean than the control group, there is no significant difference between the self-regulated learning (SRL) skills of both groups. They are both considered to have neutral SRL. This only shows that vlogging did not necessarily affect their SRL skills, in the specific context of the present study. From this, the researchers recommend that (1) teachers may find interventions that would improve students' SRL skills, especially in mathematics; (2) teachers may still utilize vlogging, especially when it comes to cognitive aspects, as this may be a good educational tool; and (3) future researchers may conduct a similar study to a bigger population and to other schools to test the generalizability of the present result, especially that this study was done during the new normal.

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