

Strategic Intervention “Project Sigla” And The Performance Of Grade 12 Students In Health Optimizing Physical Education

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Abstract — This research study aimed to determine the effectiveness of Strategic Intervention in Guiding Learners' Aptitude (Project SIGLA) in improving the academic performance of Grade 12 students in Health Optimizing Physical Education (HOPE) 4 subject. Project “SIGLA” was one of the pedagogies and initiatives done for Grade 12 students at Buenaventura Alandy National High School (BANHS) in Tayabas City to bridge the gap in students' academic performance by developing self-paced modules that allow students to deal with the lesson and improve exam results even without in-depth discussions. Descriptive-comparative research method was used in gathering quantitative data from the Diagnostic Test (Pre-test), Achievement Test (Post-test) and survey questionnaire. The respondents were thirty (30) Grade 12 students from various strands of Buenaventura Alandy National High School (BANHS)'s Academic, Technical Vocational, and Livelihood Track. The findings of the study reveals that (1) the pre-test scores were low and that the respondents were not adapted to the “New Normal” learning modality, resulting in poor academic performance in the HOPE 4 subject, (2) the post-test scores increased after Project “SIGLA” was implemented, indicating that the intervention was successful owing to the developed self-made learning material, (3) the contents of the self-made learning material were appropriate for modular distance learning, activities suited the learning styles of the learners, instructions were clear and understandable, and that the assessments enable learners to answer objectively with comprehension and critical thinking, (4) significant difference on the respondents' pretest and post-test scores owed to implementation of the Project “SIGLA” which enhanced academic achievement in HOPE 4, and (5) weak connections were found between the respondents' knowledge of factual, conceptual, and analytical components and the self-developed module's content, activities, teaching, and evaluation at the $\alpha = 0.05$ level. The results of this study contribute to the literature and body of knowledge concerning academic performances improvement through developed self-made learning material intervention.

Keywords — *Academic Performance, Health Optimizing Physical Education, Project SIGLA, Strategic Intervention*

I. Introduction

Based on DepEd Order No. 21 s. 2019, the implementation of the K to 12 Basic Education Program is considered to be one of the most significant educational reforms in the country. It introduces programs and projects that aim to expand and improve the delivery of basic education in the country. It seeks to provide the Filipino learners with the necessary skills and competence to prepare them to take on the challenges of the 21st century. It will make the basic education system in the Philippines at par with international standards by ensuring that it is appropriate, responsive and relevant to learners.

May 15, 2013, Republic Act No. 10533 otherwise known as the Enhanced Basic Education Act of 2013 was passed into law. RA 10533 added two years of Senior High School (SHS) to broaden the goals of high school education for college preparation, vocational and technical career opportunities as well as creative arts, sports and entrepreneurial employment. It also makes education learner-oriented and responsive to the needs, cognitive and cultural capacity and the circumstances of learners, schools and communities through the use of appropriate mediums of teaching and learning, including mother tongue.

But as COVID-19 pandemic poses challenges in the Philippines on March 2020 up to present, physical distancing and community quarantine was implemented as the health protocols and measures to be followed. Basic education is among the sectors that was heavily affected as schools and community learning centers were closed for physical conduct of classes. Through the mentioned scenario, the Department of Education released DepEd Order No. 12 S. 2020 or also known as the adoption of the Basic Education Learning Continuity Plan (BE-LCP) for School Year 2020-2021 in light of the covid-19 public health emergency in order to provide clear guidance to all offices, units, schools, and community learning centers (CLCs) of the Department of Education (DepEd), learners and their parents, partners, and stakeholders. It is a package of education interventions that will respond to basic education challenges brought about by COVID-19.

The Basic Education Learning Continuity Plan (BE-LCP) stands on different principles and one of the essential principles is to ensure the learning continuity through K-12 curriculum adjustments, alignment of learning materials, deployment of multiple learning delivery modalities, provision of corresponding training for teachers and school leaders, and proper orientation of parents or guardians of learners. These leads to the Adoption of the Most Essential Learning Competencies (MELCs) by merging, deducting and extracting learning competencies to be delivered in multiple learning modalities and platforms (Llego, 2020).

Buenaventura Alandy National High School (BANHS) offers Junior High School (Grade 7 and 8) and Senior High School (Academic and Technical Vocational and Livelihood Track). It was purely into modular distance learning as its students' chose this modality based on their capability. One of the Core Subjects in the Senior High School (SHS) Curriculum is the Health Optimizing Physical Education 1-4 which was offered from Grade 11 to Grade 12 and is pre-

requisite to one another. All tracks and strand must pass this subject in order to finished Senior High School (SHS). The SHS curriculum guide was modified into Most Essential Learning Competencies or MELCs and all learning materials turned into learning modules. There are available materials for Grade 11 Health Optimizing Physical Education (HOPE) subject but there are no existing resources for Grade 12 yet. Furthermore, teachers were tasked to create first a self-made learning module that is localized and contextualized while the learning modules from DepEd are not yet available. And it went through the process of Quality Assurance. From creating, then checking of Master Teachers and Approval of the School's Principal up to the publication of the division office.

Since face-to-face classes, the said subject was only given limited teaching and learning time which is one (1) unit per week unlike other core subjects which has four (4) units per week. It does not change even the learning modality was modified into distance learning and despite the needs to be thoroughly taught especially as it will be beneficial in today's situation for developing our physical, mental, emotional, social and even spiritual. Thus, students barely gave time, attention and value to the subject even during the face-to-face classes and more that they are in the modular distance learning. Which results to low scores in their written outputs especially in the Quarterly Assessment as they have a hard time maintaining high scores since they cannot easily master each topic in a short period of time and since they are more focused in other subjects which has more units or value. But when it comes to performances like physical activities, sports, dance and recreational activities, they almost got it perfect as they enjoy doing it with their family at home. These are the main reasons why subject teachers cannot achieve a passing percentage in the Quarterly Mean Percentage Score (MPS) which always bounce back to the teaching quality and learning materials given despite the efforts given by teachers.

This research study aims to know the effectiveness of project SIGLA - Strategic Intervention in Guiding Learners' Aptitude in enhancing the performance of Grade 12 learners in Health Optimizing Physical Education (HOPE).

Literature Review

According to the U.S. Government Accountability Office (2015), despite the effectiveness of quality physical education, whereby students have an opportunity to learn meaningful content with appropriate instruction and assessments in increasing physical activity, challenges exist to its equitable and effective delivery. Educators and policy makers may lack awareness and understanding of the potential for physical activity to improve academic achievement and the many ways in which physical activity can be and has been successfully incorporated into the school environment. The role of school physical education in providing physical activity for youth is further challenged by a demand for better standardized test scores by increasing classroom academic time and the ensuing policy pressures to do so.

Nearly half of school administrators report cutting significant amounts of time from physical education, art, music, and recess to increase time in reading and mathematics since passage of the No Child Left Behind Act in 2001. These challenges have been cited as reasons why the percentage of schools offering physical education daily or at least 3 days each week declined dramatically in U.S. schools between 2000 and 2006.

The study of Rasberry, et.al., (2015) emphasized that little evidence supports the notion that more time allocated to subject matter will translate into better test scores. Indeed, 11 of 14 correlational studies of physical activity during the school day demonstrate a positive relationship to academic performance. While Kibbe, (2015) stated that teachers can offer physical activity breaks as part of a supplemental curriculum or simply as a way to reset student attention during a lesson. On the other hand, Alvarez-Bueno, (2016) emphasized how schools should provide a relevant context for improving children's and adolescents' physical and mental health by increasing physical activity during school hours and/or beyond. The interest in the relationship between physical activity programmes and cognition during development has recently increased, with evidence suggesting a positive association.

According to the Ministry of Education, Guyana (2019), learning materials were important because they can significantly increase students' achievement by supporting student learning. For example, a worksheet may provide a student with important opportunities to practice a new skill gained in class. This process aids in the learning process by allowing the student to explore the knowledge independently as well as providing repetition. Learning materials, regardless of what kind, all have some function in student learning.

Yavich and Rotnitsky (2020) revealed that the applications of multiple intelligence theory in education are wide. Students apply the learning in the classroom according to their own dominant intelligence and learning style, which is most effective for them. Combining learning styles with dominant intelligences enhances the students' learning processes.

According to Stanford University online blog (2016), when students learn how to conduct lab experiments, interpret poems, play music, analyze aggregate data, or compare language families, they develop capacities they can use on their own to utilize facts or create new ones. The goal of such learning is an ability to perform some kind of activity. In addition, Basch (2015) conducted a comprehensive review of how children's health and health disparities influence academic performance and learning. The author's report draws on empirical evidence suggesting that education reform will be ineffective unless children's health is made a priority. Basch concludes that schools may be the only place where health inequities can be addressed and that, if children's basic health needs are not met, they will struggle to learn regardless of the effectiveness of the instructional materials used.

O'Neill and Ockmore (2016) posited that assessment was essential and integral to effective teaching and learning in Physical Education as it provides information on students' strengths,

weaknesses, and educational requirements, which informs future planning and teaching. Assessment was also vital for the provision of grades (achieved and predicted), informing others of attainment (parents, teachers etc.), and was used to judge the effectiveness of teachers and the school. Moreover, feedback from assessment has been recognized for increasing pupil motivation and engagement, and helps create a positive learning environment.

Yadav, (2019) stated that instructional materials in Physical Education were very important to help teachers teach effectively and help students learn better. The assigned or recommended textbook was just one source and it is not sufficient. Since Physical Education involves body movements and performance, it is a must that there is enough materials and resources for instruction. In addition, the purpose was to ensure that students were engaged as they learn, and both the students and the teacher were enjoying the lesson. Thus, the use of same texts and materials in teaching the subject makes the learners bored.

Darwazeh (2017) believed that presenting knowledge in a particular sequence, which is consistent with the human memory's function, will help students to store, retrieve, recall, and use information in a beneficial way; otherwise, the whole learning process will be hindered. It becomes essential that students acquire prerequisite knowledge and skills prior to attempting to process new information as they construct new knowledge in meaningful ways so that the entire teaching and learning process is enhanced.

In a study conducted by Marcondes (2016) states that educational games may be used to have students participate actively in the teaching-learning process, making them learn more effectively and readily. The aim of this study was to investigate the effect of two educational games on students' knowledge acquisition. According to these results, the educational games seemed to improve the students' knowledge acquisition in both situations: when used as a practice activity to improve the comprehension of a subject already assessed in a lecture (game 1) and when used as a teaching activity without previous lecture on the subject (game 2).

Additionally, Altmeyer (2020) emphasized that learning with hands-on experiments can be supported by providing essential information virtually during lab work. Augmented reality (AR) appears especially suitable for presenting information during experimentation, as it can be used to integrate both physical and virtual lab work. Virtual information can be displayed in close spatial proximity to the correspondent components in the experimentation environment, thereby ensuring a basic design principle for multimedia instruction: the spatial contiguity principle. The latter is assumed to reduce learners' extraneous cognitive load and foster generative processing, which supports conceptual knowledge acquisition.

Furthermore, Khan (2020), suggested that teachers must spend their time designing teaching methodologies that can promote higher-level thought skills for students to improve their student learning qualifications. Teachers can adopt methodologies to enable their students to think and discuss the content, encourage discussion, stimulate students to find information themselves,

create cause and effect, encourage student opinion, insert several characters and map concepts in the real world. Besides, additional teaching support can also be expected from educational departments and administrations.

A study of Winarti et al., (N.D.) discussed in detailed that the teachers' focus on academic ability as the sole determinant of successful learning causes learning to be incapable of developing the students' potential called Multiple Intelligence (MI), whereas they can be applied to make students enjoy learning as well as develop the potential and thinking skills of students. To overcome this problem, a teaching strategy based on Multiple Intelligence was developed in science lesson. The effectiveness of the teaching strategy was evaluated by pretest-post-test-control-group design. The study revealed that Multiple Intelligence strategy has an effect on and can be a significant predictor of the development of students' Multiple intelligence. This study showed an improvement of the SPS, specifically in the questioning ability. The results of this study will change the teaching strategy in the future, from academic ability oriented to be multiple intelligence oriented and focus on the potential of each student”.

Another study by Masooma Ali Al-Mutawah (2019) supports the result which measures the mathematical abilities of high school graduates in Bahrain. Mathematical abilities encompass conceptual understanding, procedural knowledge and problem-solving skills in the five content domains which are Number and Operations, Algebra, Geometry, Measurement, and Data Analysis and Probability. While procedural understanding focuses on performing facts and algorithms, conceptual understanding reflects a student's ability to reason and comprehend mathematical concepts, operations and relations which will be helpful in solving non-routine problems. A test consisting of questions from the five content domains was administered to students where they demonstrated conceptual understanding and procedural knowledge which enabled them to solve problems in various real-life situations. Structured interviews were also conducted to test their mathematical abilities and suggest ways to improve proficiency in mathematics and eliminate misconceptions. The results show that conceptual understanding and problem-solving skills are positively correlated. This research also endeavors to correlate students' performance in this test with their high school GPA.

II. Methodology

The study was concerned in determining the effectiveness of Project “SIGLA” (Strategic Intervention in Guiding Learner’s Aptitude) in enhancing the performance of Grade 12 students in Health Optimizing Physical Education (HOPE) 4. The researcher used descriptive comparative research method in gathering quantitative data from the Diagnostic Test (Pre-test), Achievement Test (Post-test) and survey questionnaire.

Descriptive-comparative method helped the researcher to gathered and interpret the data of this study as this method considers two (2) variables that are not manipulated, and establish a formal procedure to conclude that one is better than the other (formplus, 2021).

Just like this method, the researcher utilized random sampling for the Diagnostic Test (Pre-test), Achievement Test (Post-test) and survey questionnaire.

Respondents of the Study

The respondents were composed of thirty (30) Grade 12 learners from different strands of Academic and Technical Vocational and Livelihood Track of Buenaventura Alandy National High School.

Sampling Techniques

Random selection of respondents from Grade 12 learners of Academic and Technical Vocational and Livelihood Track from Buenaventura Alandy National High School thru the students' capability and availability of gadgets and internet connection to answer Google Forms, was used by the researcher.

Research Instrument

As a descriptive-comparative type of research, the researcher utilized the results of the Diagnostic Test (Pre-test) and Achievement Test (Post-test) and evaluation of the developed self-made learning materials. Pre-test and post-test were composed of 50-item multiple choice test questions that is based on the Most Essential Learning Competencies (MELCs) and table of specifications (TOS) for the specific quarter (third quarter) when the study was implemented. The content, grammar and test constructions of the pre-test (diagnostic) and post-test (achievement) underwent the process of Quality Assurance as it was checked and edited by the subject's Master Teacher and approved by the School Principal before it was field tested in school.

Research Procedure

To facilitate the study, the researcher underwent several steps in gathering the data needed.

- First, the researcher presented the instruments that will be used in the data gathering to the adviser and panel members of the research course for checking.
- Second, after it was checked, the adviser and panel members gave their approval for the instrument to be field tested.
- Third, the researcher presented the approved letter of the adviser and panel members to the Dean of Graduate Studies and Research before data collection.
- Fourth, after the instrument and letters have been approved, the researcher started the field testing and determined that the instrument was useful enough for the study.
- Fifth, the researcher presented the approved letters from adviser and panel members of the research course to the school principal.
- Sixth, the school principal approved the study to be implemented in the school including the selected Grade 12 learners to serve as respondents.

- Seventh, the researcher started to facilitate the Diagnostic Test (Pre-test) at the beginning of third quarter and Achievement Test (Post-test) at the end of the third quarter.

Moreover, ONLY those who answered the Diagnostic Test (Pre-test) at the beginning of the third quarter were allowed to take the Achievement Test (Post-test). The teacher's class record served as its basis. The respondents who have the capability and available gadgets and internet connection answered both assessments through Google Forms. The responses given by the respondents will be treated with utmost confidentiality by the researcher with strict adherence to the data privacy act.

Statistical Data

To analyze the result of the Diagnostic Test (Pre-test) and Achievement Test (Post-test), the Mean Percentage Score (MPS) results and item analysis was computed during the third quarter of SY. 2021-2022. Further, to analyze and interpret the significant difference of pre-test and post-test, T-test for dependent sample mean was used. On the other hand, to analyze and interpret the result of evaluation on the developed self-made learning materials, weighted average mean was used.

Formula:



T-test for dependent sample

$$t = \frac{(\sum D)/N}{\sqrt{\frac{\sum D^2 - \frac{(\sum D)^2}{N}}{(N-1)(N)}}$$

1. The "ΣD" is the sum of X-Y from Step 2.
2. ΣD²: Sum of the squared differences (from Step 4).
3. (ΣD)²: Sum of the differences (from Step 2), squared.

Weighted Mean

Weighted Mean Formula


Weighted Mean = $\frac{\sum_{i=1}^n (x_i \cdot w_i)}{\sum_{i=1}^n w_i}$


Weighted Mean = $\sum_{i=1}^n (x_i \cdot w_i)$

Where Σ denotes the sum

W is the weights

x is the value

III. Results and Discussion

The data were analyzed and interpreted to draw conclusions and recommendations as regards to the study on Strategic Intervention Project “SIGLA” and the Performance of Grade 12 Students in Health Optimizing Physical Education (HOPE).

Table 1. The pre-test scores of the students before Project “SIGLA” -Strategic Intervention in Guiding Learners’ Aptitude implementation

Pretest scores	Frequency	Percent
8	1	3.3
10	1	3.3
11	4	13.3
12	3	10
13	1	3.3
14	2	6.7
15	1	3.3
16	3	10
17	2	6.7
18	5	16.7
19	3	10
21	1	3.3
22	1	3.3
23	1	3.3
24	1	3.3
Total	30	100
Mean	15.77	
MPS	39.42	
SD	4.1	

Table 1 shows the pre-test scores of thirty (30) students before Project “SIGLA” Strategic Intervention in Guiding Learners’ Aptitude implementation in Health Optimizing Physical Education (HOPE) 4 subject at the beginning of third quarter for the School Year 2021-2022. Based on the results, the respondents highest score in the pre-test was twenty-four (24) out of forty (40) items while the lowest score was eight (8). This gave a mean score of 15.77, 39.42 Mean Percentage Score (MPS) and a standard deviation of 4.10. Moreover, the table confirms that majority of the respondents got a score of eighteen (18) which was equivalent to 16.7 percent or 5 out of 30 students obtained the highest frequency among the scores presented.

Evidently, most of the respondents did not obtain the passing score in the pre-test before the implementation of Project “SIGLA” due to lack of mastery of the content or prior knowledge regarding the topic considering that it was just a review of what they’ve learned in the previous HOPE subjects. Another reason was that, HOPE subject was only taught once a week during modular distance learning modality and the subject unit value was lesser than the other subjects.

According to the U.S. Government Accountability Office (2015), despite the effectiveness of quality physical education, whereby students have an opportunity to learn meaningful content with appropriate instruction and assessments in increasing physical activity, challenges exist to its equitable and effective delivery. Educators and policy makers may lack awareness and understanding of the potential for physical activity to improve academic achievement and the many ways in which physical activity can be and has been successfully incorporated into the school environment. The role of school physical education in providing physical activity for youth is further challenged by a demand for better standardized test scores by increasing classroom academic time and the ensuing policy pressures to do so.

Nearly half of school administrators report cutting significant amounts of time from physical education, art, music, and recess to increase time in reading and mathematics since passage of the No Child Left Behind Act in 2001. These challenges have been cited as reasons why the percentage of schools offering physical education daily or at least 3 days each week declined dramatically in U.S. schools between 2000 and 2006.

Table 2. The post-test scores of the students after Project “SIGLA” -Strategic Intervention in Guiding Learners’ Aptitude implementation

Post-test scores	Frequency	Percent
19.00	1	3.3
22.00	2	6.7
23.00	1	3.3
25.00	1	3.3
26.00	1	3.3
27.00	2	6.7
28.00	2	6.7
29.00	2	6.7
30.00	2	6.7
31.00	1	3.3
32.00	1	3.3
33.00	4	13.3
35.00	4	13.3
37.00	2	6.7
38.00	1	3.3
39.00	3	10.0
Total	30	100.0
Mean	30.97	
MPS	77.42	
SD	5.52	

Table 2 shows the post-test scores of the respondents after the implementation of Project “SIGLA” - Strategic Intervention in Guiding Learners’ Aptitude in Health Optimizing Physical

Education (HOPE) 4 subject at the end of the third quarter for the School Year 2021-2022. Based on the results, the respondents highest score in the post-test was thirty-nine (39) out of forty (40) items while the lowest score was nineteen (19). This gave the mean score of 30.97, 77.42 Mean Percentage Score (MPS) and a standard deviation of 5.52. Likewise, the table confirms that majority of the respondents obtained 13.3 percent or 8 out of 30 students got the scores of 33 and 35 respectively which represent the highest frequency among the scores presented.

As to the results, most of the respondents obtained a passing score in their post-test after the implementation of Project “SIGLA” wherein self-made learning modules were provided including physical activities like games and other alternative task as part of the activities that they can do during their modular distance learning at home. With this, the learners gave more time and attention to the subject matter resulting to the mastery of content and skills related to it.

The study of Rasberry, et.al., (2015) emphasized that little evidence supports the notion that more time allocated to subject matter will translate into better test scores. Indeed, 11 of 14 correlational studies of physical activity during the school day demonstrate a positive relationship to academic performance. While Kibbe, (2015) stated that teachers can offer physical activity breaks as part of a supplemental curriculum or simply as a way to reset student attention during a lesson. On the other hand, Alvarez-Bueno, (2016) emphasized how schools should provide a relevant context for improving children's and adolescents' physical and mental health by increasing physical activity during school hours and/or beyond. The interest in the relationship between physical activity programmes and cognition during development has recently increased, with evidence suggesting a positive association.

Table 3. Student’s perception on the developed self-made learning module in terms of Content

Each topic in the module was...

Each topic in the module was...	Mean	SD	Verbal
1. easy to understand.	3.63	0.56	Strongly Agree
2. appropriate to my grade level.	3.73	0.45	Strongly Agree
3. suitable in the “new normal”.	3.60	0.50	Strongly Agree
4. arranged logically or step-by-step for the learner	3.67	0.48	Strongly Agree
5. connected from previous topic to the new topic.	3.63	0.56	Strongly Agree
6. applicable in the real-life scenario.	3.50	0.57	Strongly Agree
7. localized and can be experience within the community.	3.50	0.51	Strongly Agree
8. unbiased as it is relatable to each gender.	3.70	0.47	Strongly Agree
9. designed to enable learners deepen their knowledge, skills and values.	3.67	0.48	Strongly Agree
10. provided with vocabulary words and language that are within the comprehension of the learners.	3.57	0.50	Strongly Agree
Overall Mean	3.62	0.51	Strongly Agree

Table 3 shows the student’s perception on the developed self-made learning module in terms of content which obtained an overall mean of 3.62 and a standard deviation of 0.51 with verbal interpretation of strongly agree.

This proved that through the self-made learning module, majority of the respondents strongly agree that the content was understandable, appropriate to their grade level and suitable to the new normal. Also, the respondents clearly agree that the arrangement of the topic was logically constructed as it is related from previous topic thus, they can easily relate to real-life scenario since it is not gender-biased. In all, it was designed to enable learners to deepen their knowledge and skills independently.

According to the Ministry of Education, Guyana (2019), learning materials were important because they can significantly increase students’ achievement by supporting student learning. For example, a worksheet may provide a student with important opportunities to practice a new skill gained in class. This process aids in the learning process by allowing the student to explore the knowledge independently as well as providing repetition. Learning materials, regardless of what kind, all have some function in student learning.

Table 4. Student’s perception on the developed self-made learning module in terms of Activities

The activities were ...	Mean	SD	Verbal
11. provided with alternative task/options.	3.57	0.50	Strongly Agree
12. appropriate to the learners’ age, gender and personality.	3.67	0.48	Strongly Agree
13. suitable in the “new normal”.	3.60	0.50	Strongly Agree
14. arranged from easy to difficult.	3.40	0.62	Strongly Agree
15. connected to the previous activities.	3.63	0.49	Strongly Agree
16. applicable in the real-life scenario/future activities in the real world.	3.60	0.50	Strongly Agree
17. a combination of games, trending topics and skills.	3.63	0.49	Strongly Agree
18. entitled based on the trending terms to boost learners’ motivation.	3.67	0.55	Strongly Agree
19. compose of activities and drills for the mastery of concepts and skills.	3.63	0.49	Strongly Agree
20. filled with examples for the learners’ to easily know what to do.	3.70	0.47	Strongly Agree
Over-all mean	3.61	0.51	Strongly Agree

Table 4 shows the student’s perception on the developed self-made learning module in terms of activities which obtained an overall mean of 3.61 and a standard deviation of 0.51 with verbal interpretation of strongly agree.

This verified that through the self-made learning module, majority of the respondents strongly agree that the activities in the module provides alternative task which helped them achieved and submit the needed outputs based on their own interest and capability. The mastery of concepts and skills just became a laidback thru the combination of games, trending topics and drills. They were not just learning but instead participating in physical activities and become holistically healthy.

Yavich and Rotnitsky (2020) revealed that the applications of multiple intelligence theory in education are wide. Students apply the learning in the classroom according to their own dominant intelligence and learning style, which is most effective for them. Combining learning styles with dominant intelligences enhances the students' learning processes.

There was a long-held belief that health is an important determinant of educational performance, yet only recently has evidence begun to accumulate on a plausible physiologic pathway explaining the influence of one important health behavior physical activity on brain function and cognitive processes. These data increase confidence that improving physical activity and fitness may result in better school achievement and performance (Kohl III, 2015).

Table 5. Student’s perception on the developed self-made learning module in terms of Instruction

The instructions for each activity...	Mean	SD	Verbal
21. were from general to specific.	3.47	.57	Strongly Agree
22. utilized common words that is familiar to learners.	3.67	.48	Strongly Agree
23. followed the safety protocols especially during performance task.	3.77	.43	Strongly Agree
24. were step-by-step or detailed for each alternative task/option.	3.67	.48	Strongly Agree
25. were applicable in the “new normal”.	3.80	.41	Strongly Agree
26. requires doing the activity independently.	3.60	.56	Strongly Agree
27. motivate the learners as it provides them alternative task/option.	3.73	.45	Strongly Agree
28. encourage the cooperation of family members to help the learner do each activity.	3.70	.53	Strongly Agree
29. developed learners’ decision-making as it requires them to choose which activity to do.	3.77	.43	Strongly Agree
30. learner-friendly as it always respects what the learners wants or capable to do.	3.70	.47	Strongly Agree
Overall mean	3.69	0.48	Strongly Agree

Table 5 shows the student’s perception on the developed self-made learning module in terms of instruction which obtained an overall mean of 3.69 and a standard deviation of 0.48 with verbal interpretation of strongly agree.

This confirmed that through the self-made learning module, majority of the respondents strongly agree that the instructions in the module were clear as it utilized common words familiar to them and constructed in detailed or step-by-step. It also developed learners’ decision-making as it requires them to choose which activity to do based on their physical fitness/capability and encourage the cooperation of family members to help the learner do the activity.

According to Stanford University online blog (2016), when students learn how to conduct lab experiments, interpret poems, play music, analyze aggregate data, or compare language families, they develop capacities they can use on their own to utilize facts or create new ones. The goal of such learning is an ability to perform some kind of activity. In addition, Basch (2015) conducted a comprehensive review of how children's health and health disparities influence academic performance and learning. The author's report draws on empirical evidence suggesting that education reform will be ineffective unless children's health is made a priority. Basch concludes that schools may be the only place where health inequities can be addressed and that, if

children's basic health needs are not met, they will struggle to learn regardless of the effectiveness of the instructional materials used.

Table 6. Student's perception on the developed self-made learning module in terms of Assessment

The questions were ...	Mean	SD	Verbal
31. objective type as it always required the learners to have choices (Multiple Choice Test).	3.63	0.49	Strongly Agree
32. based on the topic given in a specific week/s.	3.73	0.45	Strongly Agree
33. from easy to difficult.	3.47	0.51	Strongly Agree
34. provided with or utilized common words that the learners can relate to.	3.67	0.48	Strongly Agree
35. instructed in detailed to know where to write their answers.	3.67	0.48	Strongly Agree
36. provided with choices that the learners can relate to.	3.67	0.48	Strongly Agree
37. unbiased as it is constructed in a positive manner.	3.70	0.47	Strongly Agree
38. specific to avoid confusion and wrong answers.	3.50	0.63	Strongly Agree
39. not opinionated as it only requires one correct answer.	3.43	0.63	Strongly Agree
40. given as post-test in each topic.	3.63	0.49	Strongly Agree
Overall mean	3.61	0.51	Strongly Agree

Table 6 shows the student's perception on the developed self-made learning module in terms of assessment which obtained an overall mean of 3.61 and a standard deviation of 0.51 with verbal interpretation of strongly agree.

This proved that through the self-made learning module, majority of the respondents strongly agree that the assessment used in the module was effective as it trained them to answer objective type of questions like multiple choice in every topic which served as post-test and enables them to used their critical reading and thinking skills. It also serves as practice in answering objective type of questions to increase test scores not only in their post-test but also for future licensure examinations.

O'Neill and Ockmore (2016) posited that assessment was essential and integral to effective teaching and learning in Physical Education as it provides information on students' strengths, weaknesses, and educational requirements, which informs future planning and teaching. Assessment was also vital for the provision of grades (achieved and predicted), informing others of attainment (parents, teachers etc.), and was used to judge the effectiveness of teachers and the school. Moreover, feedback from assessment has been recognized for increasing pupil motivation and engagement, and helps create a positive learning environment.

Table 7. Significant difference in the pre - test and post test scores of students in Health Optimizing Physical Education (HOPE) 4 after the implementation of the Project SIGLA

Variables	Post-test		Pre-test		t-value	df	Sig. (2-tailed)
	Mean	SD	Mean	SD			
Result of pretest/post test	30.97	5.52	15.77	4.10	20.034	29	.000

Table 7 shows the significant difference in the pre-test and post-test scores of the respondents after the implementation of the Project SIGLA. It can be seen from the table that the scores in post-test tremendously increased after Project “SIGLA” had been implemented.

The computed t-value of 20.034 was greater than the critical value at $\alpha=0.05$ which means that the null hypothesis has been rejected. This means that the development of supplementary materials and the implementation of the Project “SIGLA” significantly contributes to the learning of the students and increase academic performance in HOPE 4 subject. It can also ascribe that the Project “SIGLA” was an effective intervention in addressing the issues and concerns of the students in performing both written and performance task activities in modular distance learning modality.

Yadav, (2019) stated that instructional materials in Physical Education were very important to help teachers teach effectively and help students learn better. The assigned or recommended textbook was just one source and it is not sufficient. Since Physical Education involves body movements and performance, it is a must that there is enough materials and resources for instruction. In addition, the purpose was to ensure that students were engaged as they learn, and both the students and the teacher were enjoying the lesson. Thus, the use of same texts and materials in teaching the subject makes the learners bored.

Table 8. Significant relationship of the developed self-made learning module and performance of Grade 12 students in Health Optimizing Physical Education (HOPE) 4 in terms of Factual Knowledge

FACTUAL	Frequency	Percent
7.00	1	3.3
9.00	1	3.3
10.00	5	16.7
11.00	3	10.0
12.00	7	23.3
13.00	7	23.3
14.00	6	20.0
Total	30	100.0

Table 8 shows the frequency and percentage distribution of the respondents' scores in the performance tasks in terms of factual knowledge. Evidently, the highest score obtained was fourteen (14) out of fifteen (15) items while the lowest score was seven (7). Consequently, majority or fourteen (14) out of thirty (30) respondents obtained a score ranging from twelve to thirteen (12-13) with an equivalent percentage of twenty-three-point three percent (23.3%) for both scores. It was followed by score of fourteen (14) with twenty percent equivalent points. Then, five (5) respondents got score of ten (10) and three (3) students obtained scores of eleven (11) with percentage equivalent to sixteen-point seven percent (16.7%) and ten percent (10%) respectively. However, two students got a score of seven (7) and nine (9) with equivalent percentage of three point three (3.3%).

This proved how the self-made learning module aid the students in acquiring basic information of the specific topic or content in HOPE 4 subject since they did not have hard times recalling and describing terms even in an objective type of questions like multiple-choice test. Relating the previous topic to new ones helped them easily remember and understand how each term must be explained and utilized.

Darwazeh (2017) believed that presenting knowledge in a particular sequence, which is consistent with the human memory's function, will help students to store, retrieve, recall, and use information in a beneficial way; otherwise, the whole learning process will be hindered. It becomes essential that students acquire prerequisite knowledge and skills prior to attempting to process new information as they construct new knowledge in meaningful ways so that the entire teaching and learning process is enhanced.

Table 9. Significant relationship in the developed self-made learning module and performance of Grade 12 students in Health Optimizing Physical Education (HOPE) 4 in terms of Conceptual Knowledge

CONCEPTUAL	Frequency	Percent
8.00	2	6.7
9.00	2	6.7
10.00	2	6.7
11.00	3	10.0
12.00	2	6.7
13.00	1	3.3
14.00	10	33.3
15.00	8	26.7
Total	30	100.0

Table 9 shows the frequency and percentage distribution of the respondents' scores in the performance tasks in terms of conceptual knowledge. The highest score obtained was fifteen (15) with frequency of eight (8) or equivalent to twenty-six-point seven percent (26.7%). It was followed by score of fourteen (14) with frequency of ten (10) or thirty-three-point three percent

(33.3%). Then, one (1) respondent got a score of thirteen (13) or three-point three percent (3.3%). Meanwhile, two students got the scores of twelve (12), ten (10), nine (9), and eight (8) each or equivalent to six-point-seven percent (6.7%). Lastly, three (3) students obtained a score of eleven (11) or equivalent to ten percent (10%).

As to the result, it obviously illustrates that in terms of conceptual knowledge, the implementation of Project “SIGLA” using self-made learning module with game-based approached has more impact or effect in developing the learner’s independent way of understanding and applying specific topic or content in real life scenario.

In a study conducted by Marcondes (2016) states that educational games may be used to have students participate actively in the teaching-learning process, making them learn more effectively and readily. The aim of this study was to investigate the effect of two educational games on students' knowledge acquisition. According to these results, the educational games seemed to improve the students' knowledge acquisition in both situations: when used as a practice activity to improve the comprehension of a subject already assessed in a lecture (game 1) and when used as a teaching activity without previous lecture on the subject (game 2).

Additionally, Altmeyer (2020) emphasized that learning with hands-on experiments can be supported by providing essential information virtually during lab work. Augmented reality (AR) appears especially suitable for presenting information during experimentation, as it can be used to integrate both physical and virtual lab work. Virtual information can be displayed in close spatial proximity to the correspondent components in the experimentation environment, thereby ensuring a basic design principle for multimedia instruction: the spatial contiguity principle. The latter is assumed to reduce learners' extraneous cognitive load and foster generative processing, which supports conceptual knowledge acquisition.

Table 10. Significant relationship in the developed self-made learning module and performance of Grade 12 students in Health Optimizing Physical Education (HOPE) 4 in terms of Analysis

ANALYSIS	Frequency	Percent
4.00	2	6.7
5.00	1	3.3
6.00	6	20.0
7.00	7	23.3
8.00	6	20.0
9.00	7	23.3
10.00	1	3.3
Total	30	100.0

Table 10 shows the frequency and percentage distribution of the respondents' scores in the performance tasks in terms of analysis. The highest score obtained was ten (10) with frequency of one (1) or equivalent to three-point three percent (3.3%). It was followed by scores of nine (9) and seven (7) with frequency of seven (7) or equivalent to twenty-three-point three percent (23.3%). Then, six (6) respondents got the score of eight (8) and six (6) each or equivalent to twenty percent (20%). Meanwhile, one (1) student got the score of five (5) with equivalent percentage of three-point three percent (3.3%). The leased score was four (4) with frequency of two (2) or equivalent to six-point seven percent (6.7%).

It is without doubt that in terms of analysis, the implementation of Project "SIGLA" using self-made learning module developed the learner's mastery of the content and enhance their higher order thinking skills (HOTS) as they can independently analyze situations related to the content or topic included in the specific quarter.

Furthermore, Khan (2020), suggested that teachers must spend their time designing teaching methodologies that can promote higher-level thought skills for students to improve their student learning qualifications. Teachers can adopt methodologies to enable their students to think and discuss the content, encourage discussion, stimulate students to find information themselves, create cause and effect, encourage student opinion, insert several characters and map concepts in the real world. Besides, additional teaching support can also be expected from educational departments and administrations.

Table 11. Significant relationship in the developed self-made learning module and performance of Grade 12 students in Health Optimizing Physical Education (HOPE) 4

Correlations			
	FACTUAL	CONCEPTUAL	ANALYSIS
Content	-0.109	-.394*	0.122
Activities	-0.171	-0.232	0.190
Instruction	-0.024	-.378*	0.125
Assessment	-0.115	-0.268	0.101
**. Correlation is significant at the 0.01 level (2-tailed).			
*. Correlation is significant at the 0.05 level (2-tailed).			

Table 11 shows the correlation of the developed self-made learning module to the performance of students in Health Optimizing Physical Education (HOPE) 4 in terms of factual, conceptual knowledge, and analysis after the implementation of Project "SIGLA" – Strategic Intervention in Guiding Learner's Aptitude.

As to the results, the content has weak correlation with factual and analysis, however, it was moderately correlated with conceptual performances of the respondents with -.394 computed

r-value. Meanwhile, activities and assessment have also weak correlation with factual, conceptual, and analysis of respondents' performances. On the other hand, instruction was moderately correlated to conceptual with computed r-value of -0.378 and has weak correlation with factual and analysis at $\alpha = 0.05$ level.

This only proves that the most developed domain of knowledge among the bloom's taxonomy was the conceptual knowledge which enhanced the learner's independent way of understanding and applying concepts into real-life scenario through their innate multiple intelligence.

A study of Winarti et al., (N.D.) discussed in detailed that the teachers' focus on academic ability as the sole determinant of successful learning causes learning to be incapable of developing the students' potential called Multiple Intelligence (MI), whereas they can be applied to make students enjoy learning as well as develop the potential and thinking skills of students. To overcome this problem, a teaching strategy based on Multiple Intelligence was developed in science lesson. The effectiveness of the teaching strategy was evaluated by pretest-post-test-control-group design. The study revealed that Multiple Intelligence strategy has an effect on and can be a significant predictor of the development of students' Multiple intelligence. This study showed an improvement of the SPS, specifically in the questioning ability. The results of this study will change the teaching strategy in the future, from academic ability oriented to be multiple intelligence oriented and focus on the potential of each student”.

Another study by Masooma Ali Al-Mutawah (2019) supports the result which measures the mathematical abilities of high school graduates in Bahrain. Mathematical abilities encompass conceptual understanding, procedural knowledge and problem-solving skills in the five content domains which are Number and Operations, Algebra, Geometry, Measurement, and Data Analysis and Probability. While procedural understanding focuses on performing facts and algorithms, conceptual understanding reflects a student's ability to reason and comprehend mathematical concepts, operations and relations which will be helpful in solving non-routine problems. A test consisting of questions from the five content domains was administered to students where they demonstrated conceptual understanding and procedural knowledge which enabled them to solve problems in various real-life situations. Structured interviews were also conducted to test their mathematical abilities and suggest ways to improve proficiency in mathematics and eliminate misconceptions. The results show that conceptual understanding and problem-solving skills are positively correlated. This research also endeavors to correlate students' performance in this test with their high school GPA.

IV. Conclusion

Based on the findings, the following conclusions were drawn:

- There was a significant difference on the pre-test and post-test scores of the respondents after the implementation of the Project Sigla which improved the academic performance in HOPE 4 subject indicating that the null hypothesis was rejected.
- Generally, there was weak correlations on the self-developed module's content, activities, instruction, assessment and the respondents' knowledge as to factual, conceptual, and analytical aspects at $\alpha = 0.05$ level indicating that the null hypothesis was rejected.

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