

# Online Learning Modalities and Academic Performance in Physical Education Students During Covid – 19 Pandemic

Mary Joan D. Eta<sup>1</sup>, Gideon I. Juezan<sup>2</sup>

<sup>1</sup>Josefina H. Cerilles State College, Zamboanga del Sur, Philippines

<sup>2</sup>Davao del Sur State College, Digos City, Philippines

**Abstract**— The overall purpose of the study was to determine the relationship between online learning modalities and academic performance in Physical Education among the students who were enrolled during the first semester of the school year 2021-2022 at State Colleges and Universities in Mindanao, Philippines. Also, in this study, the researcher employed four moderating variables (i.e. place of residence, PE class enrolled, computer literacy, and gadget possession) to attempt to moderate the direction of the relationship between independent and dependent variables. The researcher used the survey questionnaire to ask students about their basic profile, preferred online learning modalities, and PE grades from the first semester of 2021-2022. Using the random sampling procedure, the researcher was able to select a total of 750 respondents from different SUCs to participate in the study. Using the Pearson Chi-Square and Likelihood Ratio Chi-Square, the researcher found that: there is a significant relationship between online learning modalities and the place of residence and gadget possession [ $p < 0.05$ ]. On the other hand, online learning modalities and PE classes enrolled, and computer literacy have no significant relationship [ $p > 0.05$ ]. The respondents' academic performance in PE and place of residence and PE class enrolled were found to have no significant relationship [ $p > 0.05$ ] while the academic performance in PE and computer literacy and gadget possession has a significant relationship [ $p < 0.05$ ], respectively. It was also discovered that there is no significant relationship between online learning modalities and academic performance [ $p > 0.05$ ]. This study did not specifically reveal the factors that affect the students' engagement in online PE classes. Using Academic Goal Theory, the researcher understood the students' goals were driven by their current learning scenario in which they are provided with options to learn PE and gadget possession.

**Keywords**— Learning Modalities, Physical Education, Philippines.

## I. INTRODUCTION

The emergence of the Coronavirus Disease (COVID-19) pandemic brought unprecedented disruptions in the lives of people all over the world. It came unexpectedly when no one was ready enough to brace for its impact on society. It led to the closure of educational institutions all over the world. As a result, it accelerated the development of the online learning environments within those institutions so that learning would not be disrupted. The COVID-19 pandemic has tested the readiness of centers to deal with a crisis that requires online and remote measures. Tertiary students, in particular, in the whole world are adjusting to this educational reform and trying to embrace the so-called “virtual world”. With its

perceived features, advantages, and benefits, online learning becomes a new normal

In the Philippines, the increasing number of cases of people who were infected by the virus became very startling. In response to this health crisis, the Commission on Higher Education (CHED) issued the Guidelines on the Implementation on Flexible Learning, better known as CHED Memorandum Order No. 4 series of 2020, to answer the exigency to switch the learning modality from traditional face to face approach to flexible learning. Accordingly, flexible learning provides the students with different options to choose which delivery mode of learning is convenient for them. By this means, flexible learning options provide customization of access to quality education. These flexible learning options include 1) online learning; 2) blended learning; and 3) offline learning (CHED, 2020).

According to recent research, many educational institutions and students prefer online learning over other options. Bartley and Golek (Appana, 2008) suggested that online learning makes it easy to bring remote teachers to a course. Xhaferi and Xhaferi (2020) found that students generally have positive attitudes towards online learning, and many participants would prefer to take online classes in the future due to their satisfaction with Google Classroom. Rawashdeh et al. (2021) reported that 81% of students in the UAE believe that online learning provides great advantages, including access to scientific material, while 80% of students reported that online learning improves contact between themselves and their teachers. However, the success of online learning is dependent on factors such as stable internet connections, learning software, digital skills, and access to technology (Onyema et al., 2020).

Ulum (2022) conducted a meta-analysis on the effect of online learning on academic achievement in seven countries, including the US, Taiwan, Turkey, China, Philippines, Ireland, and Georgia. The study found a moderate effect, attributed to quantitative research methods from a positivist perspective in countries with an American academic tradition. The study also suggested that support from teachers to prepare learning materials, design learning activities applicably, and use digital-based media can increase the effect level. Gopal et al. (2019) found that online classes have a significant impact on satisfaction and performance among business management and hotel management students in Indian universities, with the

quality of instructors, course design, prompt feedback, and expectations of students being factors that affect satisfaction and performance.

The purpose of the study was to investigate the relationship between online modalities and students' academic performance, while also including moderating variables to explore the links between the main variables. The study aimed to fill a gap in the existing literature and contribute to the body of knowledge on the research interest. The study's findings provide sound conclusions and implications for future research.

## II. CONCEPTUAL FRAMEWORK

The diagram that is shown below is the interplay of independent, dependent, and moderating variables of the study. It shows the intertwined relationship between online learning modalities as the independent variable and academic performance in PE as the dependent variable. The diagram on the next page also shows the moderating relationship of the place of residence, PE class enrolled, computer literacy, and gadget possession to the two main variables in the study.

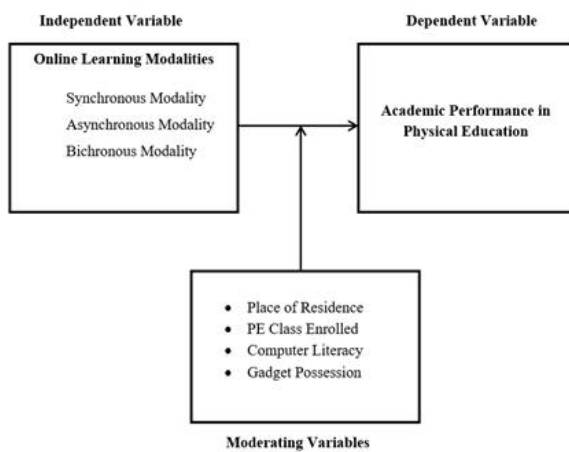


Figure 1. The schematic diagram shows the interplay of the main variables used in the study

## III. STATEMENT OF THE PROBLEM

The purpose of this study was to determine the relationship between online learning modalities and academic performance in PE among the students in state colleges of Mindanao, Philippines. The study also aimed to explain the relationships of the moderators to independent and dependent variables respectively. Hence, possible interventions were sought to be applied for further development of this research. Specifically, this study aimed to answer the following questions:

1. What is the profile of the respondents in terms of:
  - 1.1. place of residence;
  - 1.2. PE class enrolled;
  - 1.3. computer literacy; and
  - 1.4. gadget possession?
2. What are the respondents' most preferred online learning modality?
3. What are the respondents' academic performance in PE?
4. Is there a significant relationship between online learning modalities as the independent variable and moderating

variables of place of residence, PE class enrolled, computer literacy, and gadget possession?

5. Is there a significant relationship between the academic performance in PE as the dependent variable and the moderating variables of the place of residence, PE class enrolled, computer literacy, and gadget possession?
6. Is there a significant relationship between online learning modalities and academic performance in PE?

With the given problems, the following null hypotheses were formulated and tested at  $\alpha = 0.05$  level of significance for research questions number 4, 5, and 6 with the statement of the problems number 1, 2, and 3 as hypotheses free.

Ho1. There is no significant relationship between online learning modalities and place of residence, PE class enrolled, computer literacy, and gadget possession.

Ho2. There is no significant relationship between academic performance in PE and place of residence, PE class enrolled, computer literacy, and gadget possession.

Ho3. There is no significant relationship between online learning modalities and academic performance in PE.

## IV. METHODS

To help the researcher attain this purpose, a descriptive – correlational research design was used. This design involves a systematic investigation of the nature of the relationships or association between and among variables, rather than direct cause-effect relationships (Sousa et al., 2007). For the Locale of the Study, the J.H. Cerilles State College is one of the public higher education institutions (HEI) in the Philippines. Its main campus is located in Mati, San Miguel, Zamboanga del Sur. Its location is situated in the southern part of the province surrounded by mountains and plains.

There are three (3) Organic Campuses with extension classes located in the different municipalities around Zamboanga del Sur which are clustered into four (4). Part-Time faculties are utilized to cater to the subjects in these municipalities. Instructional materials are coming and constructed from regular faculties in the main and organic campuses to be distributed and implemented to all JHCSC faculties throughout extension classes. The respondents of the study were participated by 750 students of School Teacher Education who were enrolled at JHCSC Main Campus during the first semester of the school year 2021-2022. The said respondents of this study were also official enrollees from different extension classes who were by that time taking PE 101 and PE 201 classes. The said respondents took part in the said research and accomplished answering the survey questionnaires through the Google Form platform. The researcher of this study used a random sampling procedure to gather the data for her study. Before coming up with the desired sampling procedure, the researcher determined the total size population of students per PE class on every campus. That is, a total of 614 students were enrolled in PE 101 while 501 were enrolled in PE 201.

Subsequently, statistical treatment was used to determine the margin of error and the sample proportion. Based on the statistical results, a total number of 399 (65%) PE101 students while 350 (70%) PE 201 students were randomly selected to

participate in the study. A total of 750 respondents from different extension classes of JHCSC Main Campus helped to give meaning and weight to the results and findings of the study. Below is the table of sample sizes per PE class in different JHCSC extension campuses.

The primary research instrument that was used by the researcher in data gathering was the survey questionnaire which was divided into three parts: The first part of the questionnaire describes the respondents' profile in terms of place of residence, PE class enrolled during the first semester S.Y 2021-2022, computer literacy, and gadget possession; The second part of the questionnaire describes the respondents' preferred online learning modalities categorized as synchronous modality, asynchronous modality, and bichronous modality; Lastly, the third part of the questionnaire entails the respondents' accumulated grade in PE last first semester S.Y2021-2022. The researcher collected data using a three-part survey questionnaire: The first part of the questionnaire describes the respondents' profile in terms of place of residence, PE class enrolled during the first semester S.Y 2021-2022, computer literacy, and gadget possession; the second part describes the respondents' preferred online learning modalities (synchronous, asynchronous, and bichronous); and the third part describes their accumulated grade in PE last first semester S.Y2021-2022.

The study used descriptive statistics in the form of frequency and percentage distribution to treat the data gathered. In addition, cross tabulation was used to quantitatively analyze the relationship between multiple variables. Pearson Chi-Square and Likelihood Ratio Chi-Square Tests were also used to assess the significance of the main variables' relationships. As a result, the researcher was able to determine the relationship between quantitative variables and draw interpretations and conclusions from its findings.

V. RESULTS AND DISCUSSION

Profile of the Respondents

The profiling of the respondents was geared toward question no. 1 of the Statement of the Problem, "What is the profile of the respondents in terms of: 1.1 place of residence; 1.2 PE class enrolled; 1.3 computer literacy, and 1.4 gadget possession?" For a better understanding of the presentations and discussions of respondents' profiles, the frequency and percentage distribution were used and presented in tabular form.

Place of Residence

The respondents' profile in terms of place of residence with its corresponding frequency and percentage distribution is shown in Table 1 below.

Table 1. Frequency and Percentage Distribution According to Place of Residence

Place of Residence	Frequency	Percentage
Urban	133	17.7%
Rural	617	82.3%
<b>Total</b>	<b>750</b>	<b>100%</b>

Table 1 shows that 617 (82.3%) of study respondents live in rural areas and 133 (17.7%) in urban areas of Zamboanga del Sur, Philippines. Rural students struggle to adapt to modern lifestyles and learning because they rarely use technology and online learning (Dube, 2020). Most rural areas have poor internet connections (Adonis, 2020; Gocotano et al., 2021), making online classes difficult (Hossain, 2020). Urban areas have better internet and class participation (Gocotano et al., 2021). Poor internet connection hinders most students' online class performance, regardless of where they live.

Computer Literacy

The respondents' profile in terms of Computer Literacy with its corresponding frequency and percentage distribution is shown in Table 2 below.

Table 2. Frequency and Percentage Distribution According to Computer Literacy

Computer Literacy	Frequency	Percentage
Advanced	59	7.9%
Intermediate	326	43.5%
Beginner	365	48.7%
<b>Total</b>	<b>750</b>	<b>100 %</b>

Table 2 presents the profile of the respondents in terms of their computer literacy. As reflected, the majority of the respondents with a frequency of 365 (48.7%) identified themselves as "Beginners"; 326 (43.5%) of the respondents identified themselves as "Intermediate", and 59 (7.9%) of the respondents categorized themselves as "Advanced". According to Abbas et al. (2019) the degree of computer literacy variable has been seen as an essential factor in students' academic performance online. In the study of Gocotana et al. (2021) related to challenges in online learning implementation among higher education students in rural areas, they revealed that 39.91% of their respondents are beginners, 32.23% are digitally advanced, and 27.86% are digitally proficient. By this, it gives inferences that most respondents are not fully equipped with skills related to digital media and other online platforms. As such, it is important to note that the students have to be properly guided and taught all of these for more effective and efficient pacing in studying.

Preferred Online Learning Modality

Below is the Table 3 of respondents preferred online learning modality with its corresponding frequency and percentage distribution.

Table 3. Frequency and Percentage Distribution According to Preferred Online Learning Modality

Online Learning Modalities	Frequency	Percentage
Synchronous	420	56.0%
Asynchronous	163	21.7%
Bichronous	167	22.3%
<b>Total</b>	<b>750</b>	<b>100%</b>

The results of the data gathered show that 420 (56%) of the respondents preferred a synchronous approach as an online learning modality; 167 (22.3%) of the respondents preferred bichronous approach; 163 (21.7%) of the respondents preferred the asynchronous approach. By this means, the



synchronous online approach is likely the most preferable modality that students engage in this time of remote learning. In support of this result, Fabriz et al. (2021), stated in their study that synchronous activities have a positive impact on online learning as experienced among German students during the COVID-19 outbreak. Many preferred to have synchronous modality over asynchronous approach because they received a greater amount of emotional support which resulted in an overall satisfaction experience in online learning. In the researcher’s perspective, providing more than two modalities provide opportunities to students to choose for their convenience. Yet, many students in JHCSC still prefer to do synchronous online classes because it is way easier to connect with their peers and teachers.

*Academic Performance in PE*

The respondents’ academic performance in PE is certain to address and answer the Statement of the Problem number 3, “What is the respondents’ academic performance in PE?” For a better understanding of the presentations of respondents’ academic performance in PE, the frequency and percentage distribution was used by the researcher and presented in a tabular form.

*Respondents’ Academic Performance in PE*

Table 4. Academic performance in PE with its corresponding frequency and percentage distribution.

Academic Performance in PE	Frequency	Percentage
1.00 – 1.50 Excellent	287	38.3%
1.75 – 2.00 Very Good	379	50.5%
2.25 – 2.50 Good	61	8.1%
2.75 – 3.00 Passed	23	3.1%
<b>Total</b>	<b>750</b>	<b>100%</b>

Table 4 shows the academic performance of the respondents that they accumulated during the first semester of S.Y 2021-2022. Accordingly, half of the respondents with a frequency of 379 (50.5%) gained a “Very Good” remark in their PE last semester. On the other hand, 287 (38.3%) respondents obtained an “Excellent” remark while 61 (8.1%) of the respondents accumulated a “Good” grade remark. Lastly, 23 (3.1%) of the respondents got a “Passed” grade last first semester. In support to the findings, Apriyanto and Adi (2021) found out in their study that 40.2% of the students in SMA PLUS ALFATIMAH perceived online learning PE as “normal” in terms of its effectiveness. Likewise, 69.7% of respondents were in the medium category in terms of doing physical activities. Furthermore, students do not experience significant impacts both physically and psychologically. This result is reflected in the finding of Ulum (2022) revealing that the effect of online learning on academic performance is in a moderate extent. Although there are difficulties in terms of challenges that JHCSC students faced in online learning, majority of them were able to find their own ways to cope with these barriers and perform well in their PE classes. Thus, in researcher’s perspective, regardless of the pandemic situation, the students still strive hard to maintain good academic records.

*Cross Tabulation Between Independent, Dependent and Moderating Variables*

This section entails the cross-tabulation results among independent, dependent and moderating variables of the study. It sought to provide further explanation the data gathered for Statement of the Problems number 1, 2 and 3.

Table 4.1. Cross-Tabulation Between Online Learning Modalities and Place of Residence

		Place of Residence		
		Rural	Urban	Rural
Online Learning Modalities	Synchronous	352	68	420
	Asynchronous	122	41	163
	Bichronous	143	24	167
	<b>Total</b>	<b>617</b>	<b>133</b>	<b>750</b>

Table 4.1 shows that a total of 420 students from rural (352) and urban (68) residences likely chose the synchronous online learning modality, 163 (consisting of 122 students from rural and 41 from urban residences) preferred the asynchronous learning modality, while a total of 167 students (143 from rural and 24 from urban areas) took the bichronous learning modality.). In this context, online synchronous environment support learning and teaching. It also provides students and teachers with multiple ways of interacting, sharing, and the ability to interact and ask questions in real-time through digital platforms. Thus, this mode of online learning promotes positive student engagement, collaboration, and instructional pacing (Higley, 2013).

This supports the experimental research conducted by Lotfi and Pozveh (2019) who found out that the synchronous group outperformed the asynchronous group in learning vocabulary. Hence, their study also strongly suggested that interaction and collaboration are key factors in effective learning. Although JHCSC students were given an option to also choose bichronous online learning modality, the majority prefer the synchronous approach because accessing lessons and interacting is much more efficient compared to other options.

Table 4.2. Cross-Tabulation Between Online Learning Modalities and PE Class Enrolled

		PE101	PE201	Total
		Synchronous	221	199
Online Learning Modalities	Asynchronous	84	79	163
	Bichronous	94	73	167
	<b>Total</b>	<b>399</b>	<b>351</b>	<b>750</b>

Table 4.2 on the preceded page shows that 221 PE101 and 199 students from PE201 (420 students in total) were on synchronous online learning modality. Subsequently, 167 students, consisting of 94 from PE101 and 73 from PE201, took bichronous learning modality. While 163 students composed of 84 PE101 and 79 PE201 were taking asynchronous online learning modality. The results infer that most students from different classes chose the synchronous approach for various reasons. In support of this Diciano et al. (2021) concluded that the students have both desirable and undesirable experiences in PE in an online learning environment during the pandemic. These answers were reflected in online interviews conducted among 20 participants

from the University of Saint Louis. That is, five recurring themes emerged which include: 1) student-teacher interaction; 2) technology-related experience; 3) online classroom experience; 4) pedagogical-related experience; and 5) personal-related experience. With that, synchronous online learning would be very much appropriate and ideal in PE class because it encompasses all of the abovementioned advantages and benefits.

Table 4.3 Cross-Tabulation Between Online Learning Modalities and Computer Literacy

		Beginner	Intermediate	Advanced	Total
Online Learning Modalities	Synchronous	220	170	30	420
	Asynchronous	68	80	15	163
	Bichronous	77	76	14	167
<b>Total</b>		<b>365</b>	<b>326</b>	<b>59</b>	<b>750</b>

Table 4.3 above shows the cross-tabulation between online learning modalities and computer literacy. Based on the table, there are 220 beginners, 170 intermediate, and 30 advanced who took the synchronous learning modality. While, 68 beginners, 80 intermediate, and 15 advanced were taking asynchronous learning modality. On the other hand, 77 beginners, 76 intermediate, and 14 advanced took bichronous learning modality. According to Pappas (2015), synchronous interaction disregards the isolation that asynchronous online involves as it promotes collaboration and fosters a sense of community. This is the reason why many students in JHCSC preferred the said modality over the others because it provides many opportunities for learning especially to beginners who are constantly trying to hone their knowledge and skills in exploring and manipulating various learning platforms.

Table 4.4. Cross-Tabulation Between Online Learning Modalities and Gadget Possession

		Owned	Borrowed	Rented/Public Computer Facility	Total
Online Learning Modalities	Synchronous	377	38	5	420
	Asynchronous	143	12	8	163
	Bichronous	143	23	1	167
<b>Total</b>		<b>663</b>	<b>73</b>	<b>14</b>	<b>750</b>

Table 4.4 shows the cross-tabulation between online learning modalities and gadget possession. The results show that 377 students who owned gadgets, 38 students who borrowed gadgets, and 5 students who rented or used public computer facility were taking synchronous online learning modality. Subsequently, 143 students who owned gadgets, 23 who borrowed gadgets, and 1 student who used a public computer facility were on bichronous learning modality. While, 143 students who owned gadgets, 12 students who borrowed gadgets and 8 students who used public computer facility were taking asynchronous learning modality. Based on these results, it shows that a total number of 663 students have their owned gadgets which simply implies that gadget possession is an essential factor in online learning during this pandemic.

Table 4.5 presents the cross-tabulation between academic performance and place of residence. Based on the findings, 233 students from rural and 54 students from urban areas gained an excellent remark on their PE; 315 students from

rural and 64 from urban areas got a very good grade; 49 students from rural and 12 students from urban areas obtained a good grade remark; and 20 students from rural and 3 students from urban got passed remark. The results show that students from rural residences are more academically competitive than urban students. On contrary, a study by Zhao (2020), uncovered that there is a gap between rural and urban students' academic performance. Particularly, rural students are academically behind urban students in arts and humanities and STEM subjects. The study also revealed that this gap in academic performance is because of the family background and high school attended. In a researcher's perspective, the students who are living in rural areas are constantly doing their best to participate in their PE online class by all means because they are much more motivated to learn and finish their schooling. Despite of the current situation, the students from rural areas have their own gadgets which are deemed to be useful in their everyday academic life.

Table 4.5. Cross-Tabulation Between Academic Performance and Place of Residence

			Rural	Urban	Total
Online Learning Modalities	Excellent	233	54	287	Excellent
	Very Good	315	64	379	Very Good
	Good	49	12	61	Good
	Passed	20	3	23	Passed
<b>Total</b>		<b>617</b>	<b>133</b>	<b>750</b>	<b>Total</b>

Table 4.6 Cross-Tabulation Between Academic Performance in PE and PE Class Enrolled

		PE101	PE201	Total
Academic Performance	Excellent	145	142	287
	Very Good	199	180	379
	Good	38	23	61
	Passed	17	6	23
<b>Total</b>		<b>399</b>	<b>351</b>	<b>750</b>

Table 4.6 displays the cross-tabulation between the students' academic performance and the PE class enrolled. Based on the findings, 199 students from class PE101 and 180 students from class PE201 obtained very good grades in PE. Subsequently, 145 students from class PE101 and 142 students from class PE201 got an excellent remark. While 38 students from class PE101 and 23 from class PE201 garnered good grades in PE. Lastly, 17 students from class PE101 and 6 students from class PE201 got a passed remark. The results imply that the majority of the students in JHCSC performed well in PE despite the current situation they are all in. Although, there are studies that show how disadvantageous is the PE learning context nowadays. Just like Yu and Jee (2021) who revealed that most students felt that there were errors that persisted during the implementation phase of practical classes in PE. Irrespective of such challenges, the JHCSC PE teachers sought to provide opportunities for the students to engage in the subject and get good grades.

Table 4.7 shows the cross-tabulation between the students' academic performance in PE and computer literacy. The results aver that 206 beginners, 145 intermediate and 28 advanced obtained a very good remark in PE. On the other hand, 115 beginners, 150 intermediate, and 22 advanced got

an excellent grade while 31 beginners, 24 intermediate, and 6 advanced gained a good grade. Also, 13 beginners, 7 intermediate, and 3 advanced got a passed remark. These results found by the researcher imply that even though many students are not proficient enough in exploring the online platforms and tools, they are constantly doing their best to keep themselves at pace in a new mode of learning. Despite the situation, they were much more motivated to perform better and earn a high grade.

Table 4.7 Cross-Tabulation Between Academic Performance in PE and Computer Literacy

		Beginner	Intermediate	Advanced	Total
Academic Performance	Excellent	115	150	22	287
	Very Good	206	145	28	379
	Good	31	24	6	61
	Passed	13	7	3	23
	<b>Total</b>	<b>365</b>	<b>326</b>	<b>59</b>	<b>750</b>

Table 4.8

		Owned	Borrowed	Rented/ Public Computer Facility	Total
Academic Performance	Excellent	264	18	5	287
	Very Good	331	39	9	379
	Good	49	12	0	61
	Passed	19	4	0	23
	<b>Total</b>	<b>663</b>	<b>73</b>	<b>14</b>	<b>750</b>

Table 4.8 on the preceded page presents the cross-tabulation between students' academic performance and gadget possession. According to the findings, 264 students who owned gadgets, 18 students who borrowed, and 5 students who rented or used public computer facilities obtained an excellent remarks in PE. While, 331 students who owned gadgets, 39 students who borrowed, and 9 students who rented or used public computer facility garnered a very good remark. On the other hand, 49 students who owned gadgets and 12 students who borrowed had gotten a good remarks. Also, 19 students who owned gadgets and 4 students who borrowed had gotten a passed remark. The result implies that those students who possess gadgets perform well in their PE class. From the researcher's perspective gadget possession matters in online learning because a student has ample time to manipulate the device and access the learning materials.

Table 4.9. Cross-Tabulation Between Online Learning Modalities and Academic Performance in PE

	Excellent	Synchronous	Asynchronous	Bichronous	Total
Academic Performance	Excellent	158	69	60	287
	Very Good	212	77	90	379
	Good	35	13	13	61
	Passed	15	4	4	23
	<b>Total</b>	<b>420</b>	<b>163</b>	<b>167</b>	<b>750</b>

Table 4.9 shows the cross-tabulation between online learning modalities and students' academic performance in PE. Based on the results, a total of 287 students (consisting of 158 synchronous, 60 asynchronous, and 60 bichronous) got an

excellent remark in their PE; 379 students (consisting of 212 synchronous, 77 asynchronous, and 90 bichronous) obtained a very good remark; 61 students (consisting 35 synchronous, 13 asynchronous and 13 bichronous) garnered a good remark; and 23 students (consisting 15 synchronous, 4 asynchronous and 4 bichronous) got a passed remark. This implies that the synchronous approach is an effective learning modality for most students in JHCSC.

Correlation Between Dependent and Moderating Variables

This section sought to answer the Statement of the Problem number 5, "Is there a significant relationship between the academic performance in PE as the dependent variable and the moderating variables of the place of residence, PE class enrolled, computer literacy, and gadget possession?" The result of the data gathered is presented in a table for better understanding. Moreover, the order of the discussion and interpretation of the findings (relationship between dependent and moderating variables) are sequenced based on the research question given.

Table 5. Relationship Between Academic Performance in PE and Moderating Variables of Physical Residence, PE Class Enrolled, Computer Literacy and Gadget Possession

	Relationship	Correlation coefficient ( $\chi^2$ )	p-value	Remark
Academic Performance	Place of residence PE class enrolled Computer literacy Gadget possession	.921	0.820	Not significant
		6.889	0.076	Not significant
		17.050	<b>0.009*</b>	Significant
		14.349	<b>0.026*</b>	Significant

Legend:  $\chi^2$ =Chi square, \*significant at .05 level of significance

Table 5 shows the tabulated statistical operations' results for the test of significance between the moderating and dependent variables. In the succeeding sections, the researcher quantitatively analyzed the relationships among the interplaying variables of the study.

Correlation Between Academic Performance in PE and Place of Residence

The results show that the correlation level between the respondents' academic performance in PE and their place of residence is at a p-value 0.820. As such, the result implies that there is no significant relationship between the two variables and accepts Ho2. In relation of this finding, Etikan et al. (2017) averred that there is no significant difference between the students' academic performance and residential setting. The study concluded that regardless of where students choose to reside whether on campus halls or outside of the school campus, their academic performances was not dependent. Similarly, Sevinc (2017) revealed that there was no relationship between the students' residence type and academic achievement. Although that there are challenges that everyone faces in online learning such as poor internet



connection, the geographical location of the students did not matter how they cope with online learning. Both students from rural and urban areas have the same struggles and opportunities encountered. Most likely, they are pretty much the same in terms of their study pace and accessing to learning materials online. In simplest sense, the students' place of residence has nothing to do with their academic performance in PE at all since everyone strives hard to do what they can in their studies. In the Philippines, all colleges and universities as mandated by CHED formulated their guidelines for the students to continue education amidst the pandemic. In JHCSC, notwithstanding which place the students live in, administrators provided guidelines which would cater every type of learner.

*Correlation Between Academic Performance in PE and PE Class Enrolled*

Based on Table 5, the correlation between the respondents' academic performance in PE and their PE class enrolled is at the p-value of 0.76. This implies that there is no significant relationship between these variables which allowed the researcher to accept Ho2. Similarly, Ramchander and Naude (2013), concluded in their study that an increase in the enrolments of already large classes does not influence student academic performance. Yet, Mwirigi and Muthaa (2015) said that an increased enrolment can impact to a great extent the quality of learning. However, regardless of the number of enrolment of students in the online class, the researcher strongly asserts that PE teachers should be more concerned about their pedagogy of teaching and assessing their students' learning. As such, this will result in gaining a high extent of academic performance among students.

*Correlation Between Academic Performance in PE and Computer Literacy*

The statistical result presents that the relationship between the respondents' academic performance in PE and computer literacy is at a p-value of 0.009. This result implies that there is a significant relationship between the two interplaying variables. As such, the formulated Ho2 is rejected. Categorized into different levels, the researcher presumed that the beginners, intermediate and advanced have varying approaches toward their online learning. Anchored with AGT, the theory emphasized the role of performance goals in regulating a wide variety of affective, behavioral, and cognitive outcomes during people's competence pursuits ("Achievement Goal Theory", n.d.). Hence, the computer literacy skills among students (i.e. Beginner, Intermediate and Advanced) may likely influence their academic achievement in PE. That is, if one categorized himself as "Advanced", the more that they are involved in the task engagement process (Encyclopedia of Applied Psychology, 2004). Hence, having specific digital skills creates favorable conditions for engaging in productive learning technologies (Gocotana et al., 2021). In support of this finding, Gabejan and Takenaka (2021) cited that there is a relationship between students' literacy and academic performance. Their study signified that the greater the extent of computer literacy, the higher the academic

performance. In JHCSC, many students who categorized themselves as beginners have basic skills in using computers. However, in terms of knowledge and skills using some online platforms and tools, they have a hard time dealing with it. Although students are motivated and challenged at the same time, it is still imperative for the researcher to create an intervention that would help the students, including the intermediate ones, to elevate their skills in online learning. As we are leading towards Education 4.0, students are expected to demonstrate skills in technology use which is deemed to be significant and useful after the pandemic period.

*Correlation Between Academic Performance in PE and Gadget Possession*

The results show that the correlation level between the respondents' academic performance in PE and gadget possession is at a p-value of 0.026. This statistical result infers that there is a significant relationship between the two variables thus rejecting Ho2. In support of this result, Balbaguio et al. (2020), found out in their study that the use of electronic gadgets was very effective to improve their academic performance, the level of proficiency in the use of electronic gadgets was highly proficient, and the study habit of the students was very good. Yet, the researchers found that the effects of using gadgets have no significant relationship to their academic performance.

Regardless, the researcher concludes that gadgets like smart phones, laptops, and other devices that are related to online learning are very essential. These tools are very much helpful in accessing the learning materials and communicating with their PE teachers. Having the right gadgets during this time will help students perform better in activities especially in making video presentations, writing reports, and searching for assignments on the Internet. As we are moving forward, the researcher believes that gadget possession is now becoming a requirement of the learning process. Thus, it helps to improve students' academic performance.

*Correlation Between Online Learning Modalities and Academic Performance in PE*

This section is geared to answer the Statement of the Problem number 6, "Is there a significant relationship between online learning modalities and academic performance in PE?" For better presentation and understanding of the data gathered, a table was provided by the researcher.

Table 6. Relationship between Online Learning Modalities and Academic Performance in PE

	Relationship	Correlation coefficient ( $\chi^2$ )	p-value	Remark
Online Learning Modalities	Academic Performance	2.556	0.862	Not Significant

Legend:  $\chi^2$ =Chi square \*significant at .05 level of significance

The table shows the tabulated statistical operations' results for the test of significance between the independent and dependent variables. The statistical relationship between

online learning modalities and academic performance in PE is at a p-value of 0.862 as shown in Table 7. Hence, this infers that there is no significant relationship between these main variables. As such, the formulated Ho3 is accepted. On the contrary, Dev (2016) cited that academic performance has a significant and positive relationship to the learning environment of the student. In support of this, Gopal et al. (2021) found out that there is a significant impact of online classes on satisfaction and performance among the students during the pandemic. In researcher's perspective, online learning modalities alone do not directly influence the students' academic performance. As such, it is the computer literacy and gadget possession that matters to learning process especially in this time of pandemic.

## VI. DISCUSSION AND CONCLUSIONS

The COVID-19 pandemic has truly shaped the direction of the education system today. Due to the existing health protocols mandated by the national government, it seems that the approach toward learning quickly shifted from face-to-face to virtual interaction. With its perceived features, advantages and benefits compared to other modes of learning suggested by CHED, online learning became the new normal. With its growing acceptance and popularity among the students, the proponent of this research was intrigued and wanted to explore the phenomenon by understanding the relationships between online learning modalities and academic performance in PE. To contribute to the body of knowledge, the proponent of this study decided to conduct this study in the hopes of giving sound recommendations and conclusions that will help the students, parents, teachers, and school administrators of JHCSC.

First of all, the researcher concludes that most of the students who are studying at JHCSC are residing in rural areas of Zamboanga del Sur. Although they are living in the rural areas, the majority of them possess technological devices that help them to attend online synchronous, asynchronous, and bichronous PE classes. Based on the findings, the online learning modalities as an independent variable has a significant relationship with the respondents' place of residence and gadget possession. On the other hand, the said independent variable has no relationship to the other two moderating variables of PE class enrolled and computer literacy. These particular findings found by the researcher allowed her to provide implication that the geographical location of a student may likely interfere with or contribute to his or her convenience doing online classes. Many studies (e.g. Dube, Gocotano et al., Hossain) have proved that living in rural areas may likely experience a lot of inconvenience in their online classes due to the internet connection and other digital-related problems. However, upon looking into the cross tabulation results, most students in rural areas have their owned gadgets and can access any learning modalities. Fairly speaking, both rural and urban students have experienced the same struggles (i.e. internet connection) yet were given equal opportunity to access PE classes. And to address such challenges that most students experience, the researcher suggests strengthening JHCSC school policies and guidelines

giving fair and equal opportunities and learning options for all types of students. With this current situation, a lot of students especially those who identified themselves as "beginners" in computer literacy may likely encounter difficulties doing academic tasks but the progressing experience may empower them to do better in online classes.

When it comes to testing the relationship between the dependent variable and moderating variables, the researcher concluded that academic performance and moderating variables of the place of residence and PE class enrolled have no significant relationship. On the contrary, the other moderating variables such as computer literacy and gadget possession have a significant relationship to the dependent variable. This result was understood by the researcher to its extent as she was bounded to relate it to the AGT, as the theoretical framework, employed in the study. Accordingly, the AGT assumes that when one performs achievement-related tasks, that person can vary their involvement directed towards the task. That is, they can be more or less task involved at any point during the task engagement process. The probability of being task involved is assumed to be influenced by dispositional inclinations regarding these states of goal participation (Encyclopedia of Applied Psychology, 2004). Driven by the motivation to perform academically well in PE, students may vary their participation in online classes. The results in this study did not specifically reveal the factors that affect the students' engagement in online PE classes. However, the researcher presumed that academic goals may be influenced by the computer literacy skills among the students. So if the students identified themselves as beginners, the implication there could be that "beginners" may have a hard time dealing with the online class due to their limited knowledge, skills, and experience. On the other hand, beginners who have the achievement task of honing their computer literacy skills may likely have the drive to do better. That is if one also possesses a technological gadget that he or she can manipulate. Thus, a beginner can likely perform well because of such motivation.

Gadgets are deemed to be very effective to improve their academic performance (Balbague et al., 2020). The researcher concludes that gadgets like smart phones, laptops, and other devices are very essential to learning. As such, these tools are very much helpful in accessing the learning materials and communicating. Having the right gadgets, especially in this time of pandemic will help students to perform better in activities particularly making video presentations, writing reports, and searching for assignments on the Internet. In our future direction, leading to Education 4.0, the researcher believes that gadget possession is now becoming a requirement of the learning process. Lastly, the researcher concluded that there is no relationship between the online learning modality and the academic performance of the respondents in PE. Regardless of the result, the researcher strongly believes that a good learning environment provides better opportunities for the students to learn, As such, this will positively contribute to their academic performance and satisfaction.



**ACKNOWLEDGEMENTS**

The researcher would like to express her gratefulness to the Almighty God for, without His wisdom and blessings, this study would not have been made complete. A very great appreciation and deepest thanks to the following individuals for their help and support extended to the researcher:

To Dr. Mary Jocelyn V. Battung, President of the J.H. Cerilles State College for allowing the researcher to conduct this study.

To the dean of the School of Teacher Education, Dr. Joean B. Palahang, for allowing the proponent to conduct the study to among first and second year students as her respondents.

**REFERENCES**

1. Abbas, J, Aman, J., Nurrnabi, N., & Bano, S. (2019). The Impact of Social Media on Learning Behavior for Sustainable Education: Evidence of Students from Selected Universities in Pakistan. *Sustainability*, 11(6), 1683; <https://doi.org/10.3390/su11061683>
2. Achievement Goal Theory. (n.d). *Psychology.iresearchnet.com*. <https://bit.ly/3ziSJU8> Adonis, M., 2020.Challenges Hound Online Opening Classes. <https://bit.ly/3MZcl2R>
3. Appana, S. (2008). A Review of Benefits and Limitations of Online Learning in the Context of the Student, the Instructor and the Tenured Faculty. *International Journal on E-Learning*. 7 (1), 5-22. <https://bit.ly/3McxTc9>
4. Apriyanto, R. & Adi, S. (2021). Effectiveness Of Online Learning and Physical Activities Study In Physical Education During Pandemic COVID 19. *Kinestetik Jurnal Ilmiah Pendidikan Jasmani*, 5 (1), 64-70. DOI:10.33369/jk.v5i1.14264
5. Balbagoio, L.B, Articulo, K.R., Bantillo, M.M., Magabolo, N.J., Borres, E., Capuslanan, M., Jabagat, R., Panes, J., Panes, M.R., & Muyco, V.I. (2021). Effects of Electronic Gadgets in the Academic Performance of Senior High School Students. <https://dx.doi.org/10.2139/ssrn.3736606>
6. Baumann, C., Rousseau, H., Tarquino, C., Batt, M., Tarquino, P., Lebreuilly, R., Sorsana, C., Lehgrand, K., Guillemin, F., & Bourion-Bedes, S.(2021). Effect of the COVID-19 outbreak and lockdown on mental health among post-secondary students in the Grand Est region of France: results of the PIMS-CoV19 study. *Health and Quality Life Outcomes*, 19, 265. <https://doi.org/10.1186/s12955-021-01903-9>
7. Bhandari, P. (2021, July 7) An Introduction to Correlational Research. <https://bit.ly/3xZsoJU>
8. Cadiz- Gabejan, A.M. & Takenaka, M. (2021). Students' Computer Literacy and Academic Performance. *Journal of World Englishes and Educational Practices*, 3 (6). <https://bit.ly/3blhx4b>
9. Camacho, C.H., Escudero, G.I., Villacis, W., & Varela, K. (2021). The Effects of Online Learning on EFL Students' Academic Achievement during Coronavirus Disease Pandemic. *European Journal of Educational Research*, 10 (4), 1867-1879. DOI: 10.12973/eu-jer.10.4.1867
10. Campbell, R. Long, E. & Davis, M. (n.d.). Putting the E in Online Physical Education: Thinking Beyond Push-Ups and Jumping Jacks. <https://bit.ly/3tf0Ld1>
11. Carione Learning. (n.d.). Top 5 Reasons Students Take Online PE. <https://bit.ly/3zcMkKm>
12. Child Hope Philippines (2021 Aug 19). Online Classes in the PH Push Through Amid the Pandemic. <https://bit.ly/3zi1v4R>
13. Commission on Higher Education (2020). Guidelines on the Implementation of Flexible Learning. <https://bit.ly/3avdj9>

14. Dai, Y., Lin, X., Su, S., & Li, L. (2021). The Online Learning Academic Achievement of Chinese Students during the COVID-19 Pandemic: the Role of Self-Regulated Learning and Academic Entitlement. *International Journal of Psychology and Educational Studies*, 8 (3), 116-127. <https://bit.ly/3NStb4j>
15. De Guzman, M. (2021 Jun 23). Half of PHL students consider putting off school amid pandemic. <https://bit.ly/3MhVbGg>
16. Dev, M. (2016). Factors Affecting the Academic Achievement: A Study of Elementary School Students of NCR Delhi, India. *Journal of Education and Practice*, 7(4). <https://bit.ly/3xjwCeQ>
17. Diciano, J., Junior, R.R., Tindowen, D.J., Mateo, W., Versoza, J.I. (2021). Students' experiences in learning physical education in an online environment. *Edu Sportivo: Indonesian Journal of Physical Education*, 2 (3). [https://doi.org/10.25299/es:ijope.2021.vol2\(3\).7792](https://doi.org/10.25299/es:ijope.2021.vol2(3).7792)
18. Dube, B. (2020). Rural online learning in the context of COVID 19 in South Africa: Evoking an inclusive education approach. *Multidisciplinary Journal of Education Research*, 10 (2). <https://doi.org/10.17583/remie.2020.5607>
19. EHL Insights (n.d.). 11 advantages of online learning. <https://bit.ly/3NIBoy>
20. Etikan, I., Babatope, O., Yuvali, M. & Bakir, I. (2017). Influence of residential setting on student outcome. *Biom Biostat Int J*. 2017;6(4):409-414. DOI: 10.15406/bbij.2017.06.00177
21. Ezabadi, R.R., Khalilirad, S.S., Farzaneh, S. & Marandi, P.K. (2021). Relationship between Computer Literacy and E-Readiness Among Students in the Covid-19 Pandemic. *Interdisciplinary Journal of Virtual Learning in Medical Sciences*, 12 (4), <https://bit.ly/3xMjzlh>
22. Fabrizz, S. Mendzheritskaya, J., & Sthele, S. (2021). Impact of Synchronous and Asynchronous Settings of Online Teaching and Learning in Higher Education on Students' Learning Experience During COVID-19. *Frontiers in Psychology*, 11. <https://doi.org/10.3389/fpsyg.2021.733554>
23. Finol, M.O. (2020 Mar 26). Asynchronous vs. Synchronous Learning: A Quick Overview. <https://bit.ly/3tfEED>
24. Gautam, P.(2020). Advantages and Disadvantages Of Online Learning. <https://bit.ly/3xefgAf>
25. Gocotano, T., Banggay, J.C., Jerodiaz, M.A., & Rey Nasibog, H. Higher Education Students' Challenges on Flexible Online Learning Implementation in the Rural Areas: A Philippine Case. *International Journal of Learning, Teaching and Educational Research*, 20 (7), 262-290, <https://doi.org/10.26803/ijlter.20.7.15>
26. Gopal, R., Singh, V. & Aggarwal (2021), A. Impact of online classes on the satisfaction and performance of students during the pandemic period of COVID 19. *Educ Inf Technol*, 26, 6923-6947. <https://doi.org/10.1007/s10639-021-10523-1>
27. Harwood, C & Thrower, S. (2020). Chapter 9 - Motivational climate in youth sport groups. *The Power of Group in Youth Sports*, 145-163. <https://doi.org/10.1016/B978-0-12-816336-8.00009-3>
28. Higley, M. (2013 Oct). Benefits of Synchronous and Asynchronous e-Learning. <https://bit.ly/3GND8xE>
29. Hossain, M.A., Jahid, M.I.K., Hossain, K.M.A., Walton, L.M., Uddin, Z., Haque, M.O., Kabir, M.F., Arafat, S.M., Sakel, M., Faruqui, R., & Hossain, Z. (2020 Sep 24). Knowledge, attitudes, and fear of COVID-19 during the Rapid Rise Period in Bangladesh. *Plos One*. <https://doi.org/10.1371/journal.pone.02>
30. Juezan, G. I., & Rudy Jr, M. E. (2022). Interaction between student's perception and their physical education experience as part of the school curriculum.