Integration of Technology in the Conduct of Physical Education Classes: Inputs to Instructional Module

Li Xinxin

Emilio Aguinaldo College, Manila, Philippines
Email: *xinxin.li.mnl[at]eac.edu.ph*

Abstract: *Technology in Physical Education, the purpose of this study was to use of technology in our Physical Education curriculum, it covers in theory and practical. It enhanced the performance of learning the sports skills in theoretical and physical activities. Technology has enough potential to simplify more effective instruction in physical education and to provide physical educators with key pieces of information that can be used in advocacy efforts. Teachers can also conduct video interviews to document student's impressions of physical education and motor learning. Rapid developments in electronic technology have made important effects on the education systems in the world. With technology, particularly mobile technology, physical educators now have a wide range of tools they can use to examine and improve their students' physical skills. The list includes video analysis, wearable tech, physical education apps, gaming systems, virtual classes, and monitors and trackers. Digital media and how it should be dealt with is currently a dominant topic in discourse about schools and teaching. Teaching physical education can be challenging for any number of reasons, from a lack of equipment to keeping students engaged. To meet these challenges, some educators are turning to technology in physical education to create more dynamic classes that work for students with a wide range of fitness levels. Here are some examples of technology and how you can use them in your classes. Technology, in general, has positively reshaped physical education classes. With apps, online videos, monitors, and trackers, physical education teachers are able to create customized and reasonable goals for their students. In the process, students felt more engaged and committed to being physically active which is essential in developing healthy habits.*

Keywords: Teaching Technology, Integration of Technology Virtual Classes

1. Background of the Study

The researcher is a PE teacher of Hunan Normal University. It was founded in 1938 and located in the famous historical and cultural city of Changsha, is one of the key universities in the national "211 Project", the national "double first-class" construction university, the Ministry of Education and Hunan Province to jointly build the "double first-class" construction university, the Ministry of Education's undergraduate teaching level assessment of outstanding universities, Hunan Province "world-class discipline construction university". It has 21 first-level disciplines authorized for doctoral degrees, professional degree authorization categories for doctoral degrees in education, 34 first-level disciplines authorized for master's degrees, 24 professional degree authorization categories for master's degrees, and 20 post-doctoral research mobile stations. Facing the future, Hunan Normal University will always adhere to the school motto of "benevolence, love, precision and diligence", implement the fundamental task of cultivating morality and people, base itself on Hunan, serve the whole country, face the world, and make every effort to build "Innovative Normal University, characteristic Normal University, open Normal University, wisdom Normal University, happiness Normal University". Strive to create a new situation in the construction of a high-level university with distinct characteristics of teacher education, first-class in China and well-known in the world. Technology, in general, has positively reshaped physical education classes. With apps, online videos, monitors, and trackers, physical education teachers are able to create customized and reasonable goals for their students. In the process, students felt more engaged and committed to being physically active which is essential in developing healthy habits.

1.1 Statement of the Problem

This study was conducted to assess the integration of technology in the conduct of Physical Education classes with the end view of inputs to an instructional module. Specifically it answers the following:

1) What is the assessment of the two groups of respondents on the integration of technology in the conduct of PE classes in terms of the following:
   - Phone applications in physical education,
   - Online videos,
   - Virtual classes,
   - Gaming systems,
   - Monitors and trackers, and
   - Smartwatches?
2) Is there significant difference in the assessment of the two groups of respondents on the integration of technology in the conduct of PE classes in terms of the following:
   - Phone applications in physical education,
   - Online videos,
   - Virtual classes,
   - Gaming systems,
   - Monitors and trackers, and
   - Smartwatches?

1.2 Hypothesis of the Study

There is no significant difference in the assessment of the two groups of respondents on the integration of technology

in the conduct of PE classes in terms of Phone applications in physical education, Online videos, Virtual classes, Gaming systems, Monitors and trackers, and Smartwatches.

Scope and Delimitation of the Study

This study was conducted at Hunan Normal University located at Changsha China. Respondents employed in this study are: PE teachers and students.

Significance of the Study

The findings of the study may be beneficial to the following stakeholders.

Ministry of Education: The educational agency will be able to assess the needs and challenges of the teachers in general in terms of coping up with subject demands especially to those who are teaching PE subject. Policies and procedures may be crafted or enhanced along this area.

Schools: They will realize the importance of the teacher having competency in teaching PE. Thus, improved support for programs may be provided to the school administrators.

School Administrators: This study may offer a supportive environment for effecting positive collaboration among school administrators and teachers, in mainstreaming of teachers with difficulties in teaching PE using technology.

PE Teachers: The study will strengthen collaborative model of teaching PE using technology. An effective collaboration involves both teachers recognizing the strengths each is bringing to the team- teaching situation, and deciding how to use those strengths to support students' achievement.

Students: In a collaborative approach which integrates the students with the general (regular) education students, both groups benefit from the support of the regular teachers and inclusive education teachers.

Future Researchers: This will serve as a valuable reference for them and parallel studies may be pursued.

2. Research Methodology

This chapter discusses the research methodology of the study. Specifically, it presents the research design; the population, sample, and sampling technique used; the research instruments used in gathering data; the data gathering procedure; and the statistical tools used so as to analyze the data and thus answer the research questions.

Research Design

The study utilized the descriptive research design. According to Best and Khan (2018), a descriptive research describes and interprets" what is" (p.113). Accordingly, it describes the data and characteristics about the population or phenomenon being studied. Likewise, it is concerned with conditions or relationships that exist (p.113) among variables. Considering that the objective of this study is to assess the integration of technology in the conduct of PE classes in terms of Phone applications in physical education, Online videos, Virtual classes, Gaming systems, Monitors

and trackers, and Smartwatches the descriptive research design is the most applicable for this research.

This type of research attempts to explain a particular condition or situation". It is also "concerned with conditions or relationships that exist" (Best and Kahn (2018). In other words, "it deals with the relationships between variables, the testing of hypotheses, and the development of generalizations, principles, or theories that have universal validity. It is concerned with functional relationships" (Best and Kahn 2018)

Population, Sample, and Sampling Technique

Population is defined as the totality of the individual with one or more characteristics in common that are of interest to the researcher. Thus, the population is the group to which the researcher would like to make inferences.

To accomplish this study, the researcher utilized the simple random sampling from the population. A subset of a statistical population in which each member of the subset has an equal probability of being chosen. A simple random sample was utilized in this study in which all the identified respondents from Hunan Normal University located at Changsha China. The respondents employed in this study are the PE teachers and students as follows:

Respondents	Population	Sample
PE Teachers	170	26
Students	2000	312
Total	2,170	338

Research Instrument

The questionnaire is a researcher-made instrument which was submitted for validation. experts in the field of research and the members of the panel were the critique of the said instrument.

The researcher welcomed the suggestions, and made necessary revisions to mark the said instrument valid.A researcher-made questionnaire was the main instrument in gathering of data necessary for the study. To validate the content of the questionnaire, expert's judgment was undertaken. Expert judgment refers to the degree to which the instruments logically appears to measure the intended variable (Best and kahn 2018).

The instrument was validated using selected respondents who have direct knowledge the integration of technology in the conduct of PE classes in terms of Phone applications in physical education, Online videos, Virtual classes, Gaming systems, Monitors and trackers, and Smartwatches.

Data Gathering Procedure

The researcher wrote a letter to the head of Hunan Normal University located at Changsha China. After the approval of the said request, administration of survey questionnaires followed. The researcher made sure every respondent was given an explanation on the aims/ goals of the study, and how to accomplish the said instrument. The respondents were given enough time to answer and fill-up the survey questionnaires. After each and every respondent accomplished the instrument, the researcher retrieved the

survey questionnaire and consolidate the same for data encoding. Thereafter, the raw data were encoded and statistically treated using the Statistical Package for Social Sciences (SPSS) for analysis and interpretation.

Statistical Treatment of Data

To answer the specific questions identified and to test the hypotheses as well as to facilitate the analyses of the data gathered through the survey questionnaire, applicable statistical tools were utilized as follows:

The percentage distributions was used to determine the percentage of the two (2) groups of respondents.

The weighted mean was computed. The computed weighted means were interpreted using the following scales:

Scale	Range	Verbal Interpretation
4	3.51 – 4.00	Strongly Agree (SA)/Very Good
3	2.51 – 3.50	Agree (A)/Good
2	1.51 – 2.50	Disagree/Poor
1	1.00 – 1.50	Strongly Disagree (SD)/Very Poor

To test the hypotheses if there is no significant difference in the assessment of the two (2) groups respondents in the integration of technology in the conduct of PE classes in terms of Phone applications in physical education, Online videos, Virtual classes, Gaming systems, Monitors and trackers, and Smartwatches the Analysis of Variance (ANOVA) was used.

3. Results and Analysis

1) On the assessment of the two groups of respondents on the integration of technology in the conduct of PE classes in terms of the following:
a) Phone applications in physical education,
b) Online videos,
c) Virtual classes,
d) Gaming systems,
e) Monitors and trackers, and
f) Smartwatches.

Table 1: Mean and Verbal Interpretation on the assessment of the two groups of respondents on the integration of technology in the conduct of PE classes in terms of the Phone applications in physical education

Phone applications in physical education	Teacher		Student		Overall	
	Mean	VI	Mean	VI	Mean	VI
Everyone in the class has a phone application which can be used during PE classes	3.58	SA	3.41	SA	3.5	SA
PE teachers can use devices to their advantage in encouraging their students to work out and exercise during PE classes	3.23	A	3.25	SA	3.24	A
Students can access important information regarding their fitness and diet with just a few clicks	3.15	A	3.2	A	3.18	A
mobile phones and phone apps should be encouraged	3.41	SA	3.45	SA	3.43	SA
phone apps available are designed to track movements and offer nutritional guides during PE classes	3.1	A	3.05	A	3.08	A
Overall Mean	3.3	SA	3.27	SA	3.29	SA

Legend: 3.51 - 4.00 – Strongly Agree (SA)/Very Good (VG) ; 2.51 - 3.50 Agree(A)/Good (G); 1.51 - 2.50 – Disagree(D)/Poor (P); and 1.00 - 1.50 – Strongly Disagree (SD)/Very Poor (VP)

The two groups of respondents assessed the integration of technology in the conduct of PE classes in terms of the Phone applications as Very Good (VG) based on the overall rating of 3.29, with verbal interpretation of strongly agree (SA), [TR,[WM=3.30 and SR=3.27], both with verbal interpretation of strongly agree (SA). Of all the indicators of the dimensions of integration of technology in the conduct of PE classes in terms of the Phone applications, Everyone in the class has a phone application which can be used during PE classes was rated the highest with overall mean of 3.50 with verbal interpretation of Strongly Agree/Highly Implemented highly , [TR=3.58 and SR=3.41] both with verbal interpretation of Strongly Agree (SA).

On the other hand, Phone apps available are designed to track movements and offer nutritional guides during PE classes, was rated the lowest with overall mean of 3.08 with verbal interpretation of Agree, [TR,[WM=3.10 and SR=3.05] both with verbal interpretation of Agree (SA).

Based on the above results, the researcher infers that the two groups of respondents strongly agreed that everyone in the class has a phone application which can be used during PE classes and that mobile phones and phone apps should be encouraged among students.

Table 2: Mean and Verbal Interpretation on the assessment of the two groups of respondents on the integration of technology in the conduct of PE classes in terms of the Online videos

Online videos	Teacher		Student		Overall	
	Mean	VI	Mean	VI	Mean	VI
School has faster and more reliable internet, streaming videos are accessible to students and teachers during PE classes	3.87	A	2.89	A	3.38	A
PE teachers can take advantage of this technology to encourage their students to enhance their skills by checking out online videos and demonstrations.	3.4	SA	3.22	A	3.31	A
PE instructors have enough time in searching for videos that can fit every student's needs	3.89	SA	2.86	A	3.38	A
Teachers encourage their students to create their own instructional videos of any workout they are passionate about doing	3.95	SA	3.2	A	3.58	SA
More engaging than having students sit and watch videos that are already on the internet	4	SA	2.75	A	3.38	A
Overall	3.82	SA	2.99	A	3.41	SA

Legend: 3.51 - 4.00 – Strongly Agree (SA)/Very Good (VG); 2.51 - 3.50 Agree (A)/Good (G); 1.51 - 2.50 – Disagree(D)/Poor (P); and 1.00 - 1.50 – Strongly Disagree (SD)/Very Poor (VP)

The two groups of respondents assessed the integration of technology in the conduct of PE classes in terms of the Online videos as Very Good (VG) based on the overall rating of 3.41, with verbal interpretation of strongly agree (SA), [TR, [WM=3.82 and SR=2.99],with verbal interpretation of Strongly Agree (SA) and Agree (A).

Of all the indicators of the dimensions of integration of technology in the conduct of PE classes in terms of the online videos , Teachers encourage their students to create their own instructional videos of any workout they are passionate about doing was rated the highest with overall mean of 3.58 with verbal interpretation of Strongly

Agree/Very Good ighly , [TR=3.95 and SR=3.20] with verbal interpretation of Strongly Agree (SA), and Agree (A). On the other hand, PE teachers can take advantage of this technology to encourage their students to enhance their skills by checking out online videos and demonstrations, was rated the lowest with overall mean of 3.31 withverbal interpretation of Strongly Agree (SA)/Very Good (VG), [TR,[WM=3.40 and SR=3.21] with verbal interpretation of Strongly Agree (SA)/Very Good (VG) and Agree (A)/Good.

Based on the above results, the researcher infers that the two groups of respondents strongly agreed that teachers encourage their students to create their own instructional videos of any workout they are passionate about doing.

Table 3: Mean and Verbal Interpretation on the assessment of the two groups of respondents on the integration of technology in the conduct of PE classes in terms of the Virtual Classes

Virtual classes	Teacher		Student		Overall	
	Mean	VI	Mean	VI	Mean	VI
Virtual classes also allow students to express their opinions and views about their activities.	3.51	SA	3.41	SA	3.46	SA
Students can develop different activities during PE classes	3.23	A	3.45	SA	3.34	SA
There are a lot of video chat programs that can hold virtual PE classes.	3.15	A	3.25	SA	3.2	A
There are many video conferencing software platforms to choose in conducting PE classes	3.25	SA	3.12	A	3.19	A
There are many video conferencing software platforms to be used in the PE classes	3.43	SA	3.35	SA	3.39	SA
Overall	3.32	SA	3.32	SA	3.32	SA

Legend: 3.51 - 4.00 – Strongly Agree (SA)/Very Good (VG); 2.51 - 3.50 Agree(A)/Good (G); 1.51 - 2.50 Disagree(D)/Poor (P); and 1.00 - 1.50 – Strongly Disagree (SD)/Very Poor (VP)

The two groups of respondents assessed the integration of technology in the conduct of PE classes in terms of the virtual classes as Very Good (VG) based on the overall rating of 3.32, with verbal interpretation of strongly agree (SA), [TR,[WM=3.32 and SR=3.32], with verbal interpretation of Strongly Agree (SA).

Of all the indicators of the dimensions of integration of technology in the conduct of PE classes in terms of the virtual classes , Teachers encourage their students to create their own instructional videos of any workout they are passionate about doing was rated the highest with overall mean of 3.58 with verbal interpretation of Strongly Agree/Very Good ighly , [TR=3.95 and SR=3.20] with verbal interpretation of Strongly Agree (SA), and Agree (A).

On the other hand, PE teachers can take advantage of this technology to encourage their students to enhance their skills

by checking out online videos and demonstrations, was rated the lowest with overall mean of 3.31 with verbal interpretation of Strongly Agree(SA)/Very Good (VG), [TR,[WM=3.40 and SR=3.21] with verbal interpretation of Strongly Agree (SA)/Very Good (VG) and Agree (A)/Good.

Based on the above results, the researcher infers that the two groups of respondents strongly agreed that teachers encourage their students to create their own instructional videos of any workout they are passionate about doing.

Virtual classes allow students to express their opinions and views about their activities. They are also valuable in developing students' writing and communication skills. They enable students to blend into media and enhance their creative thinking.

Table 4: Mean and Verbal Interpretation on the assessment of the two groups of respondents on the integration of technology in the conduct of PE classes in terms of the Gaming System

Gaming systems	Teacher		Student		Overall	
	Mean	VI	Mean	VI	Mean	VI
Video games can change the way students think and feel about being physically active and competitive	3.58	SA	3.41	SA	3.5	SA
Students love of video games and spark their interest in their application to physical education	3.23	A	3.15	A	3.19	A
Teachers even make a great solution to keeping kids active in bad weather	3.15	A	3.2	A	3.18	A
With gaming systems applied to gym classes, students can take an activity associated with inactivity and turn it into something productivity	3.2	A	3.12	A	3.16	A
In gaming system students keep immersed and engaged which can be continued at home	3.43	SA	3.35	SA	3.39	SA
Smartwatches are handy in physical education classes	3.48	SA	3.31	SA	3.29	SA
Overall	3.35	SA	3.26	SA	3.31	SA

Legend: 3.51 - 4.00- Strongly Agree (SA)/Very Good (VG) ; 2.51 - 3.50   Agree(A)/Good (G); 1.51 - 2.50 Disagree (D)/ Poor (P); and 1.00 - 1.50 – Strongly Disagree (SD)/Very Poor (VP)

The two groups of respondents assessed the integration of technology in the conduct of PE classes in terms of the gaming systems as Very Good (VG) based on the overall rating of 3.32, with verbal interpretation of strongly agree (SA), [TR,[WM=3.32 and SR=3.32],   with verbal interpretation of Strongly Agree (SA).

Of all the indicators of the dimensions of integration of technology in the conduct of PE classes in terms of the gaming system, Teachers encourage their students to create their own instructional videos of any workout they are passionate about doing was rated the highest with overall mean of 3.58 with verbal interpretation of Strongly Agree/Very Good ighly , [TR=3.95 and SR=3.20] with verbal interpretation of Strongly Agree (SA), and Agree (A).

On the other hand, PE teachers can take advantage of this technology to encourage their students to enhance their skills by checking out online videos and demonstrations, was rated the lowest with overall mean of 3.31 with verbal interpretation of Strongly Agree(SA)/Very Good (VG), [TR,[WM=3.40 and SR=3.21] with verbal interpretation of Strongly Agree (SA)/Very Good (VG) and Agree (A)/Good.

The above findings relate to the following discussion as cited: Video games can change the way students think and feel about being physically active and competitive. They appeal to their love of video games and spark their interest in their application to physical education. They even make a great solution to keeping kids active in bad weather. With gaming systems applied to gym classes, students can take an activity associated with inactivity and turn it into something productivity. They keep students immersed and engaged which can be continued at home.

2) On the significant difference in the assessment of the two groups of respondents on the integration of technology in the conduct of PE classes

Table 5: Summary of T-test Values on the Significant Difference in the Assessment of the Two Groups of Respondents on the integration of technology in the conduct of PE classes

Variables	Critical t- value (2 tail)	Computed t	P Value	Decision	Conclusion
1. Phone applications in physical education	3.1505	1.245	0.299	Accept Ho	With no significant difference
2. Online videos	3.1505	0.967	0.413	Accept Ho	With no significant difference
3. Virtual classes	3.1505	0.478	0.699	Accept Ho	With no significant difference
4. Gaming systems	3.1505	0.521	0.622	Accept Ho	With no significant difference
5.Monitorsand trackers	3.1505	0.544	0.492	Accept Ho	With no significant difference
6. Smartwatches	3.1505	0.275	0.095	Accept Ho	With no significant difference

Shown in table 5 above is the summary of t-test values on the significant difference in the assessment of the two groups of respondents on the integration of technology in the conduct of PE classes The computed P values are: .299; .413, .699, .622, .492 and .095 for the variables of phone applications in physical education, online videos, virtual classes, gaming systems, monitors an d trackers, and smartwatches which are greater than 0.05 level of significance. This called for the acceptance of the null hypotheses in each of the above-mentioned variables, which means that there was no significant difference in the on the dimensions of integration of technology in the conduct of PE classes.

The researcher can infer that both respondents being in the same school will have the same experiences and observations on the integration of technology in their P.E. classes, hence there will be no significant difference in their assessment of the above mentioned variables.

3) Based on the results of the study what inputs to instructional module can be proposed?

Table 9: Inputs to Proposed Instructional Module

Key Result Areas	Strategies/Methods	Person/s Involved
1 Enhanced curriculum, syllabus and competencies	Revisit of the curriculum and syllabus which will improve the learning competencies of students.	Deans PE Department Chair Faculty Students
2. Faculty and Instruction Proficiency of faculty members on the integration of technology in their classes	Seminar workshop on the use of technology on the conduct of classes	Faculty PE Department Chair Faculty
3. Facilities Provision of facilities for updated technology	Request for provision of updated tools in the integration of technology for PE classes	PE Department Chair Dean

4. Discussions

Summary of Findings
1) On the assessment of the two groups of respondents on theIntegration of technology in the conduct of PE classes.
   - In terms of Phone applications, assessment was Very Good (VG) based on the overall rating of 3.29, with verbal interpretation of strongly agree (SA), [TR, [WM=3.30 and SR=3.27], both with verbal interpretation of strongly agree (SA).
   - In terms of Online videos, assessment was Very Good (VG) based on the overall rating of 3.41, with verbal interpretation of strongly agree (SA), [TR,[WM=3.82 and SR=2.99],   with verbal interpretation of Strongly Agree (SA) and Agree (A)
   - In terms of virtual classes, assessment was Very Good (VG) based on the overall rating of 3.32, with

verbal interpretation of strongly agree (SA), [TR,[WM=3.32 and SR=3.32], with verbal interpretation of Strongly Agree (SA).

- In terms of the gaming systems, assessment was Very Good (VG) based on the overall rating of 3.32, with verbal interpretation of strongly agree (SA), [TR,[WM=3.32 and SR=3.32], with verbal interpretation of Strongly Agree (SA).

- In terms of the Monitors and trackers, assessment was Very Good (VG) based on the overall rating of 3.26, with verbal interpretation of Strongly Agree (SA), [TR,[WM=3.35 and SR=3.17], with verbal interpretation of Strongly Agree (SA), and Agree (A).

- In terms of the Smartwatches, assessment was Very Good (VG) based on the overall rating of 3.41, with verbal interpretation of Strongly Agree (SA), [TR,[WM=3.81 and SR=3.00], with verbal interpretation of Strongly Agree (SA), and Agree (A).

2) On the significant difference in the assessment of the two groups of respondents on the integration of technology in the conduct of PE classes.

The computed P values are: .299; .413, .699, .622, .492 and .095 for the variables of phone applications in physical education, online videos, virtual classes, gaming systems, monitors an d trackers, and smartwatches which are greater than 0.05 level of significance. This called for the acceptance of the null hypotheses in each of the above-mentioned variables, which means that there was no significant difference in the assessment of the two groups of respondents on the dimensions of integration of technology in the conduct of PE classes.

5. Conclusion

1) The two groups of respondents assessed the integration of technology in terms of phone application, online videos, virtual classes, gaming systems, monitors and trackers, and smartwatches as very good.

2) There were no significant differences in the assessment of the two groups of respondents in the integration of technology in the conduct of PE classes.

3) Technology, in general, has positively reshaped physical education classes. With apps, online videos, monitors, and trackers, physical education teachers are able to create customized and reasonable goals for their students. In the process, students felt more engaged and committed to being physically active which is essential in developing healthy habits.

4) Foregoing findings and conclusions considered, the following recommendations were proposed by the researcher, to wit:
- The university should provide sufficient time and technical support
- Teachers need to be trained on web-based environment prior to their online teaching
- Teachers have to devise ways to encourage students' involvement and fair ways to evaluate.
- The PE teachers need time to create the active learning strategies, which comprise providing feedback to the learners in online curriculum.

- Teachers need to be trained in the web-based environment prior to their online teaching to keep pace with the evolving education environment.
- Replicate study on the topic involving other respondents is recommended to future researchers

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