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

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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 you can use:

- Phone applications in physical education,
- Online videos,
- Virtual classes,
- Gaming systems,
- Monitors and trackers,
- Smartwatches?

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 you can use 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,
   - 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 the following:

Phone applications in physical education,
Online videos,
Virtual classes,
Gaming systems,
Monitors and trackers, and
Smartwatches.

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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 Khan (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 Khan 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:

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Population</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE Teachers</td>
<td>170</td>
<td>26</td>
</tr>
<tr>
<td>Students</td>
<td>2000</td>
<td>312</td>
</tr>
<tr>
<td>Total</td>
<td>2,170</td>
<td>338</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Scale</th>
<th>Range</th>
<th>Verbal Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3.51 – 4.00</td>
<td>Strongly Agree (SA)/Very Good</td>
</tr>
<tr>
<td>3</td>
<td>2.51 – 3.50</td>
<td>Agree (A)/Good</td>
</tr>
<tr>
<td>2</td>
<td>1.51 – 2.50</td>
<td>Disagree/Poor</td>
</tr>
<tr>
<td>1</td>
<td>1.00 – 1.50</td>
<td>Strongly Disagree (SD)/Very Poor</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Phone applications in physical education</th>
<th>Teacher</th>
<th>Student</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Everyone in the class has a phone application which can be used during PE classes</td>
<td>3.58</td>
<td>SA</td>
<td>3.41</td>
</tr>
<tr>
<td>PE teachers can use devices to their advantage in encouraging their students to work out and exercise during PE classes</td>
<td>3.23</td>
<td>A</td>
<td>3.25</td>
</tr>
<tr>
<td>Students can access important information regarding their fitness and diet with just a few clicks mobile phones and phone apps should be encouraged</td>
<td>3.15</td>
<td>A</td>
<td>3.2</td>
</tr>
<tr>
<td>phone apps available are designed to track movements and offer nutritional guides during PE classes</td>
<td>3.41</td>
<td>SA</td>
<td>3.45</td>
</tr>
<tr>
<td>Overall Mean</td>
<td>3.3</td>
<td>SA</td>
<td>3.27</td>
</tr>
</tbody>
</table>

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

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

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.
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). 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.

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 ignly , [TR=3.95 and SR=3.20] with verbal interpretation of Strongly Agree (SA), and Agree (A).

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

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

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 ignly , [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.

### 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

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

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 (G), 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 (G).

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

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

4. Discussions

Summary of Findings

1) On the assessment of the two groups of respondents on the Integration 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).
In the conduct of respondents on the dimensions of integration of technology.

- 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 and 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

- 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

References