Digitalization of Information Dissemination on Teaching-Learning Process of Physical and Health Education in Junior and Senior Public Secondary Schools

Ogunsemore Macpherson Akindele[1]*, Awolabi Habeeb Ladi[1], Adekanmbi Barakat Omolabake[1]

[1] *Department of Human Kinetics and Health Education, Faculty of Education, University of Lagos, Nigeria*
** Corresponding author. Email: mogunsemore@unilag.edu.ng*

Abstract: The integration of technology education into the physical and health education classes is a tool to disseminate physical and healthful classes to the students efficiently which makes teaching less tedious and more interesting and retentive for the students as they observe lessons audio visually. The research focuses on the impact of digitalization of information dissemination on teaching-learning process of Physical and Health Education in junior and senior public secondary schools. The variables studied were Physical Education Apps, Wearable Tech and Virtual Classes. Three hypotheses were postulated for the study. The descriptive survey research method was adopted for the study. The population used for this study were all public secondary school teachers and students in Lagos state. A sample size of 800 respondents were selected using simple random technique through fishbowl method with replacement. Two research instruments are Digitalization of Physical Health Education Teaching Questionnaire (DPHETQ) and Digitalization of Physical Health Education Learning Questionnaire (DPHELQ) with reliability coefficient of DPHETQ 0.89 and DPHETQ 0.87. The data collected and collated were used to develop a descriptive statistic of simple percentage and charts in presenting the demographic data collected. The inferential statistics of regression analysis was used in testing all the formulated hypotheses. The findings showed that Physical Education Apps, Wearable Tech and Virtual Classes had significant impact on the teaching learning process of Physical and Health Education in junior and senior public secondary schools in Lagos state. The study recommended that teaching contents in Physical and Health Education should be digitalized to enhance learning process.

Keywords: Digitalization, Information, Learning, Physical and Health Education, Schools

1. INTRODUCTION

Education is a critical component of achieving long-term national development. The quality of a state's or society's education must be increased in order for it to achieve long-term national growth [1]. The term "education" refers to the entire process of human capacity and behavior development. It is a method of planned and continuous instruction that aims to impart a set of knowledge, skills, and understanding that is useful in all aspects of life. It refers to the tools that man can employ to solve issues and make his life more comfortable. It is one of the many methods that man uses to bring about change in his overall growth [17].

The 21st century refers to a set of essential abilities that advocates and believes schools should teach to help kids survive in today's society, such as teamwork, digital literacy, critical thinking, and problem solving. Boholano [3] stated that education in the twenty-first century emphasizes globalization and internationalization; educational systems must be equipped with a minimum of ICT resources, both hardware and software, and curricula must be designed to foster a collaborative learner-centered environment in which students can relate and respond. In the twenty-first century, new technologies, innovations, and information and communication technologies are becoming increasingly important in teaching and learning. This is an excellent way to engage teachers and students in a learning and interactive session that develops a deeper understanding of the subject [5].

The employment of modern and scientific teaching-learning methods and instructional strategies in the educational system is the focus of innovation and educational

technology. The employment of technologies has become increasingly important in today's world. Instructors and students are utilizing the internet on a large scale to generate material on a variety of topics and to supplement their learning. Furthermore, students use computers to complete their homework and projects. Individuals can become well-equipped with technologies through extensive practice. Charts, maps, models, textbooks, and other reading materials are some of the other innovative methods used in the teaching-learning process[9].

Digitalization in education refers to the use of desktop computers, mobile devices, the internet, software applications, and other sorts of digital technology to teach students of all ages which is an opportunity to develop a cognitive resource-based mechanism. Nowadays, there are methods accessible that turn learning from an academic exercise to an engaging experience gamification and collaborative [8]. The role of digital technologies and resources is to improve and add more value to the learning and teaching processes. To this end, teachers and students can access an increasing number of digital technologies and resources and use collaborative platforms to improve teaching and learning practices [2],[6].

Physical education is required in schools for students. Learners can become more motivated and involved in physical education and physical activity with the help of technology. As a result of the use of technology in physical education, they will become healthier individuals, which is the primary purpose of physical education [11]. Digital advancements are beginning to have a significant impact on both sport and physical education. The ubiquitous presence of smart phones and tablets has a significant impact on the experience of new games, but it is also beginning to influence the introduction of classic sports (FIFA, the soccer video game).Video images can also be used to improve and evaluate movement skills [15].

There is no limit to the number of health, fitness, and diet-related applications accessible on smartphones and tablets. These programs are ideal for keeping track of physical education students' progress and incorporating it into future lesson plans [16]. Technology in physical education can motivate and attract adolescents to physical education due to the use of technology, as well as, decrease the sedentary lifestyle we see in the world today [12].

In today's world, education faces significant challenges. It is expected to provide children and teenagers with the competencies needed in the future, to consider informal learning methods, and to respond to these challenges using digital technologies and modern pedagogical methods. However, schools have not been able to meet all of these challenges: for example, digital technology has yet to be widely utilized in education [4]. Physical education teachers struggle to implement technology for multiple reasons. According to Hyndman [7], the reasons why teachers struggle to integrate technology are that it can be a distraction for learners, teachers require more professional development, and technology can alter lesson time and flow. Using the right technology, getting proper training, and planning lessons ahead of time can help teachers avoid these issues and integrate technology into the classroom. Technology in physical and health education classrooms is significant because it excites and energizes students while also allowing them to connect physical education classes to the outside world.

2. RESEARCH HYPOTHESES

1. Physical and Health Education Apps will not significantly influence teaching-learning process of in junior and senior public secondary schools.
2. Wearable Tech will not significantly influence teaching-learning process of Physical and Health Education in junior and senior public secondary schools
3. Virtual Classes will not significantly influence teaching-learning process of Physical and Health Education in junior and senior public secondary schools

3. METHOD

The study adopted was a descriptive survey research method. The population used for this study was all public secondary school teachers and students in Lagos State. The sample comprised eight hundred (800) respondents drawn from public secondary schools in Lagos State. The sample was drawn using simple random sampling technique. Four educational district were randomly selected out of the six educational districts in Lagos state. Below is the diagrammatic representation of distribution of samples:

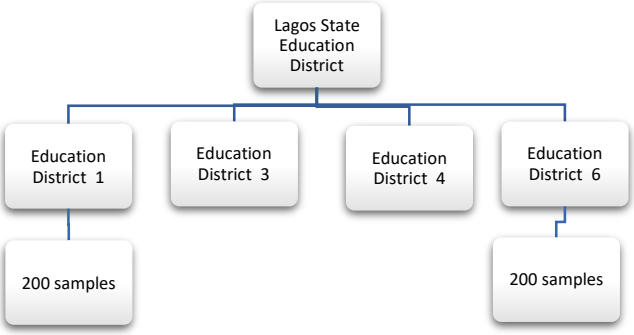

Figure 1: Representation of samples in Lagos State Education Districts
Source: Researcher developed, 2021

In order to ensure equal distribution of respondents in the four (4) education districts, two hundred samples were selected from each education districts comprising of ten (10) schools, twenty (20) administrative officers (principals or vice principals), eighty (80) teachers and hundred (100) students. The instruments used to solicit information from the respondents were validated Digitalization of Physical Health Education Teaching Questionnaire (DPHETQ) and Digitalization of Physical Health Education Learning Questionnaire (DPHELQ) with reliability coefficient of DPHETQ 0.89 and DPHETQ 0.87. The data collected and collated were used to develop a descriptive statistic of simple percentage and charts in presenting the demographic data

collected. The inferential statistics of regression analysis was used in testing all the formulated hypotheses at 0.05 level of significance. The instrument was divided into two sections. Section A solicited demographic information which Section B solicited responses on the hypotheses raised which was designed on a 4-point likert scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). This enabled the respondents to indicate the extent of agreement or disagreement to the stated item. The questionnaire was administered by the researchers to the respondents through the use of google form which was sent to a representative of each school in order to distribute it further among staff and students. The students were reached through the online group platforms designed for them during the COVID-19 lockdown.

4. RESULTS

Demographic Data of Respondents

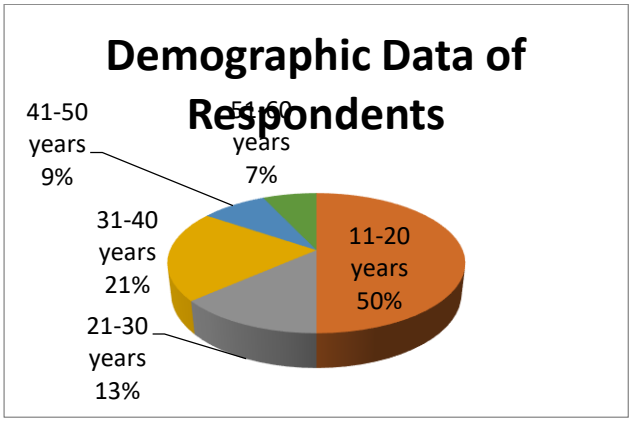

Figure 2: Pie chart representation of respondents by Age

Figure 2 presents the distribution of respondents by age. The highest respondent (n=382; 48%) were between 11-20 years old, while the lowest number of respondents (n=56; 7%) were between years old

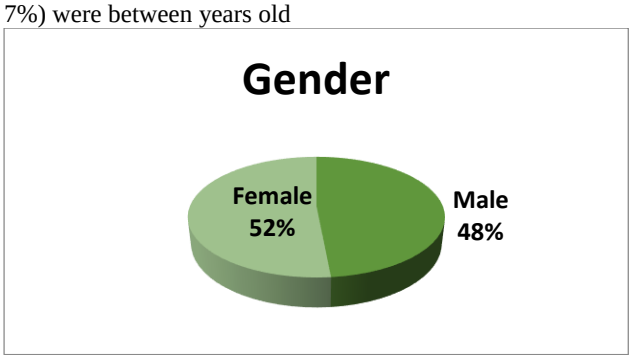

Figure 3: Pie chart representation of respondents by Gender

Figure 3 presents the distribution of respondents by gender. The highest respondent (n=412; 52%) were females, while the lowest number of respondents (n=388; 48%) were males.

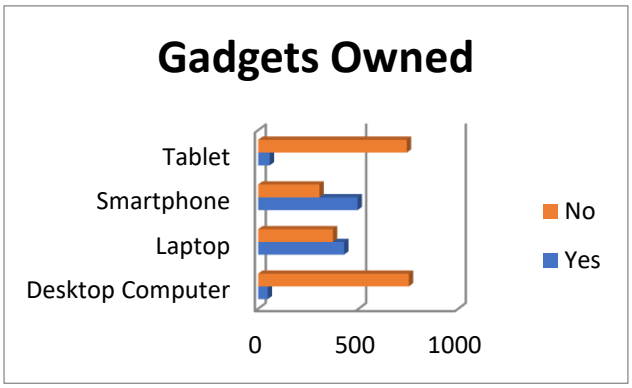

Figure 4: Bar chart representation of respondents by the number of Digital Gadgets owned

Figure 4 presents the distribution of respondents by the number of Digital Gadgets owned. The chart shows that most of the respondents has no desktop computers (n=48, 6%; n=752, 94%), most has laptops (n=428, 54%; n=372,47), most has a smartphone (n=495,62%; n=305, 38%), while most does not have a tablet (n=58, 7%; n=742,93%)

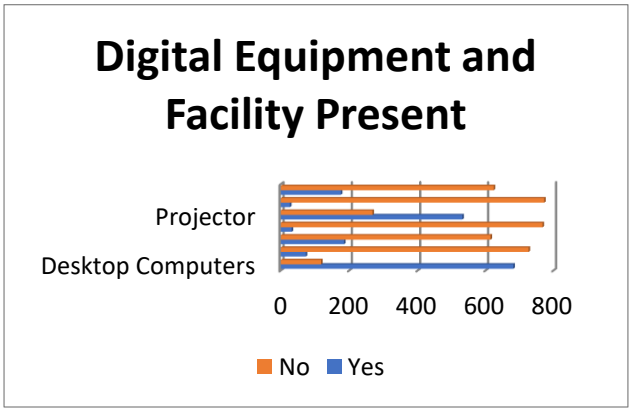

Figure 5: Bar chart representation of respondents by digital equipment and facility present in Schools.

The chart presents that most of the schools has desktop computers (n=682, 85%; n=118, 15%); most has no laptop (n=73, 9%; n=727, 91%), most schools also do not have smart phones (n=185, 23%; 615, 77%), most schools do not have tablets (n=32, 4%; 768, 96%), most has projector set (532, 67%; 268, 34%); most of the schools do not have internet facility (n=27,3%; 773, 97%) and most schools do not have constant electricity (176, 22%; 624, 78%)

Testing of Hypotheses

Hypothesis 1: Physical and Health Education Apps will not significantly influence teaching-learning process of in junior and senior public secondary schools.

Table 1: Regression Analysis showing the influence of Physical and Health Education Apps on teaching-learning process

	Sum of Squares	df	Mean Squares	F	Sig
Regression	9.146	1	9.146	112.88	0.00*
Residual	64.774	799	0.081		
Total	73.920	800			

Table 1 shows that the F-Value (112.88) was significant at a degree of freedom 1 and 799 at a 0.05 alpha level, hence the stated null hypothesis is rejected. This implies that Physical and Health Education Apps significantly influence teaching-learning process in junior and senior public secondary schools.

Hypothesis 2: Wearable Tech will not significantly influence teaching-learning process of Physical and Health Education in junior and senior public secondary schools

Table 2: Regression Analysis showing the influence of Wearable Tech on teaching-learning process of Physical and Health Education

	Sum of Squares	Df	Mean Squares	F	Sig
Regression	0.791	1	0.791	5.934	0.01*
Residual	106.409	799	0.133		
Total	107.200	800			

P<0.05

Table 1 shows that the F-Value (5.934) was significant at a degree of freedom 1 and 799 at a 0.05 alpha level, hence the stated null hypothesis is rejected. This implies that Wearable Tech significantly influence teaching-learning process of Physical and Health Education in junior and senior public secondary schools.

Hypothesis 3: Virtual Classes will not significantly influence teaching-learning process of Physical and Health Education in junior and senior public secondary schools

Table 3: Regression Analysis on the influence of Virtual Classes on teaching-learning process of Physical and Health Education

	Sum of Squares	df	Mean Squares	F	Sig
Regression	3.829	1	3.829	38.658	0.00*
Residual	79.051	799	0.099		
Total	82.880	800			

P<0.05

Table 1 shows that the F-Value (38.658) was significant at a degree of freedom 1 and 799 at a 0.05 alpha level, hence the stated null hypothesis is rejected. This implies that Virtual Classes significantly influence teaching-learning process of Physical and Health Education in junior and senior public secondary schools

5. DISCUSSION

Hypothesis 1: The first finding of this study revealed that Physical and Health Education Apps significantly influence teaching-learning process in junior and senior public secondary schools. The result of this finding correlates with Novak, Antala and Knjaz [15] who reported that Digital advancements are beginning to have a significant impact on both sport and physical education. The ubiquitous presence of smart phones and tablets has a significant impact on the experience of new games, but it is also beginning to influence the introduction of classic sports. Video images can also be used to improve and evaluate movement skills. Movement abilities may also be improved and evaluated using video pictures. There is no end to the number of health, fitness, and diet-related applications accessible on smartphones and tablets. These programs are ideal for keeping track of physical education students' progress and incorporating it into future lesson plans.

Hypothesis 2: The second finding of this study revealed that Wearable Tech significantly influence teaching-learning process of Physical and Health Education in junior and senior public secondary schools. The result of this finding correlates with Marttinen, Landi & Frederick [13] who used accelerometers to educate students to think critically about technology, physical activity, and their daily lives In many situations, students were urged to consider how they were physically active without even realizing it, or how their surroundings influenced their physical activity. The result of the study is at variance to McCaughtry et al. [14] who emphasized a more 'cautionary tale' by stating that instructors' early views regarding pedometer use shifted to doubting the use of pedometers in PE. In their study, there were logistical issues with pedometers, as well as adjustments in students' attitudes regarding the use of pedometers and a shift in instructors' attitudes toward the use of pedometers.

Hypothesis 3: The third finding of this study revealed that virtual classes significantly influence teaching-learning process of Physical and Health Education in junior and senior public secondary schools. The result of this finding correlates with Kim et al. [10] who reported that various health-related physical educational exercises should be incorporated in an online class, as the majority of participants, regardless of age or gender, experienced health issues. It is feasible that online physical education programs might be made more efficient if students get feedback by watching their own or classmates' behaviors. This is in contrast with student's face-to-face physical education programs that might receive instant feedback on their motor abilities or their performance in performing physical exercises.

6. CONCLUSION

From the result of this study, it was concluded that physical and health education Apps, Wearable Tech and virtual classes would improve the teaching and learning process of Physical and Health Education in junior and senior public secondary schools in Lagos State.

This could be as a result of the exposure of students to virtual learning through the Smartphones provided for the

during the COVID-19 lockdown. These Smartphones were provided to the students by the Government, parents and Non-governmental Organizations in order to be able to participate actively in the classes. Through the provision of this gadget students were able to explore the internet and also discovered new things. Projectors and Laptops were available in Schools with little or no internet facility and inadequate electricity.

7. RECOMENDATION

Based on the findings of the study, the following recommendations were suggested:

1. Adequate education on the use of Physical and Health education mobile Apps which can be downloaded from play stores on Smartphones.
2. Wearable gadgets such as Pedometers should also be introduced to the students in a bid to encourage health behavior and physically active lifestyle.
3. Virtual learning should not be hindered even after resumption of Physical classes as it is an avenue for students and teacher to teach and also a medium for both to have access to real instructional materials and videos downloaded from the internet.

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