ICT And The Teaching And Learning Of Physical And Health Education
In Secondary Schools In Nigeria

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Abstract

Information and communication technologies (ICT)
emergence in the society has made the world a global
village. Its relevance in a globally competitive society
cannot be overemphasized as ICT has become common
place entities in all aspects of life. The emergence of ICT
in this century is a significant development in education
and as well has an impact on the teaching and learning of
Physical and Health Education(PHE) is faced with the
challenges of a new era dominated by e-learning. ICT's
impacts on education in general have been established
but its specific impacts on other disciplines subsumed in
education have not been adequately established. These
sub-disciplines include Physical and Health Education.
For Physical and health educators, this trend is also
reflected by the necessity to improve their teaching and
methodology through the use of ICT to increase
accessibility to information and teaching process
effectiveness. This paper highlights the significance of
ICT in building intellectual capacity of students through
its application in the teaching of Physical and Health
Education. It exemplifies the concepts under the
following: the needs for ICT in education, using ICT
effectively in the teaching and learning of PHE to meet
global competitiveness, and challenges. It concludes that
the use of ICT in the teaching and learning of Health and
Physical Education greatly enhances intellectual capacity
building of students to meet up with the demands of a
21st Century Nigeria.

Key words: Internet, computer, projector, video conferencing and Global Competitiveness

Introduction
Teaching and learning in the 21st Century is becoming increasingly reliant on new technologies. Information and communication technologies (ICT) provide an excellent vehicle for engaging students in learning, it have become key tool and had a revolutionary impact on how we see the world and how we live. ICT's impacts on education (e-learning) in general have been established.

Information and communication technology means different things to different educators and researchers hence there are various views and definitions of ICT. Yusuf (2007) described ICT as an electronic technology used for accessing, processing, gathering, manipulating, presenting and communicating information. He emphasized that when ICTs are employed in education, they can accelerate, enrich and deepen basic skills in reading, writing, arithmetic and the sciences beside motivating and encouraging students to learn as they become more independent and responsible for their learning. According to Obanya (2002) information and communication technology is a broad concept that has to do with the harnessing of the process, the methods and the product of electronic and communication related technologies (and other related resources in today's knowledge – driven society), for enhancing the availability, the spread and efficiency of a set of programmed activities geared towards the achievement of clearly defined goals. Nwakundo, Oguejiofor and Nwankwo (2006) views ICT as a tool that comprises electronic devices which are utilized for the information and communication needs of institutions, organizations, students and individuals. Such electronic devices include computers (software and hardware), networking, telephone, video, multimedia and internet.

Application and utilization of the afore mentioned devices convert data, text messages, sounds and motion to common digital forms. Therefore, information and communication technology is the use of the computer as well as other electronic telecommunication appliances to input, store, and retrieve information from different sources, create and transfer messages in form of ideas and also input knowledge to recipients. In line with the above definition of ICT, it is obvious to conclude that to prepare Physical and Health Education teachers and

their students in Nigerian secondary schools to meet the demands of a global world, complete internet and intranet services should be put in place in secondary schools. To achieve the above stated objective, ICT is important as it is a teaching tool that improves the quality of secondary school student's education and support teachers' work inside and beyond the classroom. There is no gainsaying the fact that the application of ICT in the teaching and learning of Physical and Health Education in secondary schools will effective acquisition of the necessary skills that will enable the students themselves contribute to the growth, improvement and development of the nation socially and economically. It is in the light of the foregoing that this paper deems it fit to examine ICT in the teaching and learning of physical and health education in secondary schools in Nigeria in this dispensation of globalization.

Need for the use of ICT in the teaching of Physical and Health Education

Today, we live in a world in which everybody has to use new technologies. It is not an option but a must and even more for the teacher, who is supposed to have a close relationship with any innovation that occurs in their specific field of work or in general areas that have a relation to them (Rodriguez, 2011).

It has been argued that, within teacher education programmes, ICT must be integrated with curriculum, pedagogy and field experience to model what the pre-service teacher might use in their own practice (Lockyer, 2007). However, conventionally, Health and Physical Education is a discipline that does not rely heavily on written discourse and yet, where multiple representations are needed for the construction of understanding within the broad areas of sport, physical activity and health technologies are widely used as educational tools; to collect data as a basis for the development of better coaching methods and performance techniques (Lockyer, 2007). ICT has the potential to offer an exciting and challenging environment through which to enhance learning (Hall, 2001). However, it is imperative that the physical activity focus is maintained. Physical Educators must endeavour to use technologies if such integration would promote learning within the activity context. Allowing students to achieve more efficiently and effectively than they could without ICT.

The ICT is used in physical education to inspire students into action can be used to demonstrate correct techniques and to develop

pupils understanding and knowledge of the subject. By reviewing video footage of their own action – for example; their games or strategies, gymnastics sequences or dance compositions, running and athletic events as well as even swimming events – pupils can evaluate and improve their own performances, particularly if they are able to look at their performances in slow motion or from a different viewing angle. Another aspect of using ICT in physical education is from the development of 2.0 technologies that have revolutionised the way people use the Internet, and the interest in their utilization in higher education is increasing (Papastergious, Gerodimos and Antonious, 2011). This is evident in the use of blogs, wiki's multimedia, social networks that allow for the extensive collaboration amongst its users.

In a study, by Papastergious, Gerodimos and Antoniou (2011) to explore the educational potential of multimedia blogging for disciplines such as Physical Education (PE) in which a class blog was utilized as a means for PE students to reflect on and showcase their performances of specific basketball skills, through creating multimedia posts on these skills and receiving comments from their instructors, peers and an external expert. As it had been hypothesized, participation in the blogging activity did have a positive impact on students' ICT self-efficacy, multimedia processing and blogging self efficacy. (Papastergious et al., 2011).

In another study by Thomas and Stratton (2006) on measuring the attitudes, training, availability of equipment and approaches taken when using ICT in PE it was concluded that lack of inclusion of ICT in lesson was regarded as the most common weakness. It was pointed out that teachers often see the use of ICT in PE as a distraction from what they regard as the more important practical aspect of the subject. Combining the new interest of these students with the age-old institution of the PE lesson could see results escalate and levels of interest and attainment intensify. Where budgets permit, teachers should be willing to look at interactive games such as that from Nintendo Wii games incorporate the ICT into Physical Education (McNeill et al, 2010).

Effective use of ICT in the teaching and learning of physical education

Damme (2001) opines that the use of ICT in the learning process of physical education may not be a goal of its own but it is a tool with

which to reach objectives. The following are ICT tools used in teaching and learning physical and health education.

Computer

Computer is an electronic device that accepts, processes, stores, and outputs data at high speeds according to programmed instructions. Computers are used in the teaching of and Physical and Health Education to produce documents, lesson plans, presentation of lessons, to convert scores (Excel, Word, SPSS, and others) management. It also involves video units PC heart rate monitor, remedy heart rate monitor and educational software. Computer also aid learning experiences when they are used for motion analysis. This involves using computer to examine the way learners move and then determine ways in which these movements can be improved in a practical physical education class. This devise stresses how human motor abilities can be perfected and controlled (Damme,2001). For example if you ask a softball pitcher how he/she throws a fastball, they may not be able to tell you. Motion analysis visually shows the rudiments and sequence of actions involved in arm, leg movements to enhance performance of skills. Videotaped images are also transferred into computers. Special application software analyzes the images. It measures the exact angle at which the player s holding his or her arms and legs. The speed and efficiency of each movement is measured. When using images, the teachers, advantage consist in his possibility of making corrections as soon as pupils exercise is completed, which him to quickly progress and improves his learning. Computers are also used in delivering a Health and Physical Education Class with the use of a projector to show the different sections of the body and well as the movements in the performance of an Athletic activity. Other computer software such as the programmes Professional Evolution Soccer (PES) is used to play games. Learners play, identify, appreciate the skills, rules and evaluate officiating of the game.

Internet

Internet is a global system of interconnected computer networks that promotes free flow of information by pocket switching using the standardized internet protocol suit (Singh, Devi and Raychandhury, 2009). It is a global network that brings together different satellites, telephones and millions of private and commercial, academic, business and government network of local, global scope that are linked by copper

wires, fiber-optic cables and wireless connections technologies. The internet provides various information resources and services which can be used by physical educators for teaching and learning. They include electronic mail, online chat, electronic transactions, bulletin board, file transfer and file sharing, online newspapers, journals, online gaming and inter linked hyper text documents and other resources of the worldwide web.

Physical and Health Education teachers share experiences with other professionals via the internet which are integrated into teaching lessons. Students explore new knowledge as they surf the web for assignments, chat with fellow students and play games online. The internet can be used to maximize the effectiveness of the learning process in physical and health education. Students have the possibility to email their questions or comments concerning their questions and issues in health and physical education programmes, courses to their physical education teachers and academic staff. A user sends an email message to Ike mailing list which is broadcast to other users for accessing current information. Examples are the sports philosophy and Questia lists. Interactive chat through the internet improves communication with experts and colleagues and community members. Chat allows fellow physical educators to simultaneously communicate publicly on your website, internet and extranet. Team members, class and course mates from different locations can easily conduct online meetings. Colleagues could gather in large online events to interact with experts, celebrities, instructors, coaches and teachers can assess chat groups on particular academic issues in physical education and sports.

Video Conferencing

Video Conferencing is a technology that allows two or more people at different locations to see and hear each other at the same time. This communication technology offers new possibilities for sport colleges, libraries including formal instruction to share strategies for coaching sport skills. A very attractive multimedia tool determining students' enthusiastic participation in physical education lessons is represented by the audio aids. Direct or indirect aids such as drums, piano respectively. Radio cassette recorder equipped with CD/DVD can be used to reline the movement pace and get students familiarized, with some sonorous competitive conditions. The digital camera use in the instructive educative process allows a quick verification of students' placement and

posture, being at the same time a very good mean to stress body segment positions when performing sonic motor elements. These are the potentials in ICE that can be used to enhance teaching and learning of physical education.

Use of Projectors
Projector is a piece of equipment for projecting the image from film onto a screen and for playing back recorded sound from tracks on the film. In the teaching of Health and Physical Education, the projector is technologies that will assist the teacher to project some concepts in the field so as to enable the students comprehend the lesson. For example in the teaching of the performance of the different skills in the games, the projector assists the teacher to bring to limelight the concept where a short video clip of the athlete performing the skill is shown to the students thereby making the topic real and interesting. The projector can also be used in the teaching of the physiological and anatomical processes that takes place in the body.

Other Effective ways of using ICt in teaching Health and Physical Education
Athletics - use of stopwatches, wristwatch heart rate monitors, computer programme for recording performances.
Games – video analysis of individuals for assessment so that comparisons between individuals and groups can be made.
Gymnastics – preparation of flash cards demonstrating correct technique and video performance etc.
Outdoor pursuits – use of video and cameras for presentations, storage or orienteering records on laptops for portable use, mobile phones and walkie talkies for emergencies.
Dance – use of video and cameras for presentations and assessment.
Interactive tests – e.g. basketball.
Interactive resources – e.g. skeleton.
Analysis of performance. Work cards for analysis of performance, Planning and tracking various fitness levels against the use of work cards, Use of specialist exercise machines to monitor heart rate, blood pressure and correct performance levels, Tests on rules, tactics, etiquette etc.
Challenges of ICT of Using Physical Education

Although ICT holds great potentials in supporting and augmenting existing educational as well as National development efforts in Nigeria, and in the teaching of health and physical education, several challenges remain. If these challenges are not addressed the effectiveness of any ICT for the teaching and learning programme will be reduced considerably and we will not be able to successfully replicate them at the national level. Stanescu, stoicescu and Ciolca (2011) reports that it will be a big setback if Physical Education teachers are not ICT compliant. The reports indicate that many do not still appreciate the use of ICT in teaching and learning. Nowadays, it is uncommon to see physical education computers in classroom and on sport playground. These could be either ignorance of ICT use or non affordability of ICT devices. However, Sansanwal, (2009), and Stanescu, stoicescu and Ciolca (2011) observes that ICT devices are becoming more and more mobile and affordable and this could make the goal of using ICT in the teaching of physical and Health education more realisable.   Other challenges include the availability of regular power supply, staff training and development on ICT softwares; assessing softwares and packages for teachers, crashing of computers and corruption of files.

Recommendations

As the globalization of the world is progressively moving into another level, the following recommendations are hereby put forth to assist the Nigerian student to effectively maximize the ICT opportunities.
1. ICT should be integrated into the Curriculum of the Health and Physical Education
2. The computer and internet used related programmes should be integrated into the secondary school Health and Physical education curriculum to enhance students' use of ICT.
3. Employers of labour should make computer literacy requirement for employment for health and physical education teachers.
4. In-service training on computer literacy should be organized periodically for teachers of health and physical education.
5.   Secondary schools to provide computer and internet facilities for use by the Health and Physical Education teachers.

Summary and conclusion

The relevance of ICT to the teaching-learning process cannot be over emphasised Physical and Health Education teachers and students need

ICT to enhance their knowledge and askills. It offers students an experiential curriculum that is contemporary, relevant, challenging, enjoyable, and physically active. Here, the students develop the knowledge, understanding and skills to strengthen their sense of self, build and maintain satisfying relationships.. This is associated with the development of motor skill and healthy habits. Health and Physical Education within the school system requires time, facility space and interactive lesson plans. ICT provides access to information, compresses information, motivate learners, and connect learners to teachers and teacher to theft colleagues. Health and Physical Educators should avail themselves of these ICT opportunities to make their lesson more real and dynamic.

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