

Influence of Information and Communication Technology (ICT) in Sports and Exercise among University Students in Nigeria

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Abstract

Information and communication technology (ICT) is “Global community” in which people can communicate, interact on video either singly or with groups across the globe as if they are living in the same place. This work was done mainly to find out the relationship between ICT, Sport and exercise in Kogi State University, Anyigba. Descriptive research design was adopted for this study. The population comprises of all the sports and Exercise men and women across six faculties in Kogi State University, Anyigba. Total enumerations were employed to select all the four hundred and ninety sports men and women, including the weekend exercise performer. The descriptive statistics of mean and standard deviation were used to analyze the research hypothesis of the study and correlation to check if there is any significant relationship between ICT, Sport and Exercise at 0.05 level of significant. The sample size for this research work is 490 target audiences. Simple random sampling technique was used to select six faculties out of eight in Kogi State University, Anyigba. The findings indicated that there are significant relationships in the types of ICT with r value of .608, there are significant relationships in the challenges of using ICT with r value of .488 and there are significant relationships in the possible solutions to the identified challenges of using ICT in sports and Exercise in Kogi State University, Anyigba with r value of .244 respectively. It was recommended amongst others that The State and Management of the institution should train all lecturers, Coaches and Sport personnel for optimal teaching to be disseminated.

Keywords: *Information, Communication, Technology, Sports and exercise*

Introduction

Information and Communication Technology (ICT) is a renowned area which makes teaching in Exercise and Sports discipline take a broad shape by improving the practicability and bringing out the beauty of teaching and assimilation of Knowledge. Information and communication technology (ICT) is an existing and widely deployed technology that can be mobilized to step up the pace and scale of transformation in teaching and learning processes in higher education (Hanushek & Woessmann, 2015). Obenobe and Atajeromavwo (2009) stated that the concept of ICT connotes sophisticated technologies designed for monitoring, gathering and display of geospatial information. These technologies include the satellite, personal computer, Computer Support Internet, Geographic Information Systems (GIS) and

Global Positioning Systems (GPS) Remote Sensing etc. The Technical Agriculture and Rural Co-operation Consumer Technology Association CTA (2003), defined ICT as technologies that facilitate communication, processing and transmission of information by electronic means that embraced a multitude of other simple communication devices such as telephone (mobile or fixed line), television, radio, audio cassette or compact disc (cd) recorders/players, Video tape or VCD/DVD record players, faxes and telex. (Okebukola, 2006) says ICT based learning is a form of education that occurs through the multimedia in a classroom environment which has been linked to learning historically from clay tablets to books, pictures, radio, tapes to television and films, newer ICT includes internet and World Wide Web.

According to Aniodo and Ayalogu (2012) describe ICT as an electronic technology used for accessing, processing, gathering, manipulating, presenting and communicating information. ICT influences learning and performance both directly and indirectly, through the impact of motivation on performance. In academics, psychological needs satisfaction and self-determined motivation have been shown to be mechanisms that underlie the relationships between social factors and performance (Gillet, Vallerand, Amoura, &, Baldes, 2012).

ICT can be a crucial enabler in helping to achieve the SDGs through higher education, particularly in developing countries like Nigeria where closing the development gap requires substantial effort, innovation and investment (Ericsson Mobility Report, 2016). InfoDev (2015) reported that an estimated 61 different ICT -related teacher training and professional development programmes, projects, and courses were under way in African countries which Nigeria is inclusive. Introduction of ICT in education plays a role in shifting responsibility for learning from teacher to student and does not however remove the need for classroom leadership nor does it invalidate related traditional teacher skills and practices (Infodev, 2015). ICT is a tool that higher institutions like the College of Education can use to facilitate training of pre-service teachers and enhance student learning. Lecturers training pre-service teachers train them in relation to existing ICT infrastructure (Twining, Davis, Charania, Chowfin, Henry, Nordin, & Woodward, 2015). Lecturers in colleges of education anticipate a directly proportional relationship between ICT infrastructure available in the school and teacher training whereby as there is more and new infrastructure, training should increase (Twining and Henry, 2014). While training initiatives on ICT are far from covering all teachers in Nigeria.

Training Strategies on ICT

ICT can play a significant role in sports development by facilitating the review of training and practice sessions, enabling the monitoring of improvements and tracking weak points. According to Iheanacho, Okoro, and O'Neill (2013) in Lortimah & Tyoakaa (2020) asserted that video analysis is a crucial component of professional sports. Coaches, trainers, and athletes themselves can utilize recorded competition tapes to study performance during critical moments, allowing them to learn and make necessary improvements. For instance, in football, a coach can review game footage to identify areas for enhancing offensive passing/attack strategies and refine game plans. ICT, such as computers, provides a means to store large amounts of video footage in a centralized location. Instead of dealing with multiple discs or cassettes, all the relevant information can be stored in a single jump drive or laptop, ensuring easier access to the footage when needed at short notice. This consolidation of information simplifies the process of reviewing and analyzing performance, aiding in the identification of strengths and weaknesses for targeted improvement.

Accessibility to Sports Equipment and Facilities

The significance of equipment and facilities in sports development cannot be overstated. Traditionally, it was challenging for athletes in developing countries to access information about the availability and use of sports equipment and facilities, most of which were produced in advanced nations. However, with the advent of information and communication technology (ICT), accessing such information has become easier and more affordable. Nowadays, social media platforms provide low-cost access to information, including guidance on the availability, usage, and cost of sports equipment and facilities.

Through the application of ICT, the sale and distribution of sporting equipment and facilities, which are vital to sports programs, can be efficiently carried out within hours, both domestically and internationally. The web has become a crucial platform for marketing and commerce, with the majority of professional sports teams having websites and interconnected networks coordinated through various league offices. These initiatives aim to facilitate easy access to information about sports facilities, equipment, and services available for public use Lortimah & Tyoakaa (2020).

Simulation and games

These play a role in sports development. These tools provide supplementary training environments and aid in improving perceptual cognitive and perceptual motor abilities. Examples of such tools include video based decision-making tools, virtual reality environments, and simulated batting environments. Video-based decision-making tools, for instance, allow teams to use game footage to analyze and select the most desirable options, providing flexibility to suit different team strategies. Additionally, teenagers can benefit from watching and imitating athletes using ICT gadgets Lortimah & Tyoakaa (2020).

Games like dance revolution, Fx cycles, and Nintendo Wii Fit offer opportunities for students to engage in physical activity while enjoying themselves. Nintendo Wii Fit, in particular, uses a small balanced board on which players stand, following instructions on the screen to perform stretching and muscle building exercises. The Wii Fit tracking feature allows users to monitor their progress, making it a valuable tool for sports development. In summary, ICT enables easy access to information about sports equipment and facilities, while simulation and games provide supplementary training environments and enjoyable physical activity opportunities, contributing to sports development efforts Heidary, Honary, & Behjanat (2014) in Lortimah & Tyoakaa (2020).

Intelligent Management System

Intelligent management systems are another area where ICT can be applied to enhance sports development. Can, Lu, and Gan (2011) in Lortimah & Tyoakaa (2020) suggest that computer software programming and multimedia information technology can be utilized to automate fitness and recreation sports management. This includes the establishment of health management systems and office automation systems. Electronic information software can store a large amount of public health data and members' basic information, enabling the creation of a dedicated database to manage customer information and ensure confidentiality. Additionally, the use of electronic sensor equipment for access control systems and the automation of fitness equipment can save manpower and resources, providing improved security for fitness and entertainment venues.

Digital Video Camera and visual analysis software

The application of digital video cameras and visual analysis software has greatly simplified data collection and analysis in sports. Motion analysis systems using digital video cameras allow for the capture of movement, which can then be imported into interactive multimedia presentations. These presentations can provide athletes with a better understanding of the importance of breaking skills into components and the consequences of subtle variations in techniques. Visual analysis software enables athletes to view and analyze their captured movements, helping teachers assess progress toward motor skills goals, provide feedback, and evaluate improvement. Using digital video cameras and motion analysis software can be a valuable tool for beginners to improve their techniques and provide professional support for athletes to enhance their learning (Sansanwal, 2009; Lortimah & Tyoakaa 2020).

Video conferencing technology allows individuals at different locations to see and hear each other simultaneously. This communication technology offers new possibilities for physical educators, coaches, trainers, and athletes to share their thoughts and engage in discussions as if they were in the same room. Video conferencing saves time and energy by eliminating the need to bring all parties to a single location for the purpose of analysis and discussion of sports development (Lortimah & Tyoakaa, 2020).

In summary, intelligent management systems utilizing ICT can automate fitness and recreation sports management, improve data collection and analysis through digital video cameras and visual analysis software, and enable remote collaboration through video conferencing technology, enhancing sports development efforts (Lortimah & Tyoakaa, 2020).

Spaaij (2009) defined sport as an institutionalized physical activity which operates by rules fixed externally. Sport today is globally accepted as an instrument for promoting peace, unity and understanding among nations. Sports is education, is life, and above all character molder by all standard (Coakley, 2011). The value of sports is very high and it is having very much influence worldwide to bring peace and friendship with each country. Because of the value of sports publicity has increased more which make it wide spread all over the world (Ramesh, 2016).

Inadequate physical activity and lack of exercise allows easy development of illness like atherosclerosis, damage of cardiac muscles, improper functioning of the heart amongst others, due to increase of pressure of the arteries and restriction of blood flow to the organs, if these conditions are on the high side, it may results in cardiovascular disease and cardiac arrest (Schofield et.al, 2009; Dominic et.al 2018). Regular physical exercise has several beneficial effect on overall health. While decreasing body mass and adiposity are the primary outcomes of exercise, exercise can mediate several diseases that accompany obesity including type 2 diabetes and cardiovascular diseases (Pinchard et.al., 2019).

There are a number of factors that contribute to educators' decisions about whether to use ICT when planning and teaching. The influences of ICT use involve structures of attitude. The formation of attitudes can provide an understanding of teachers' decisions and perceptions (Lee & Solomon, 2005). Teachers' attitudes, qualification and experience are factors associated with ICT use. Both a positive attitude about ICT use and ICT skills, in combination, are accepted precursors for effective use of ICT (Migliorino & Maiden, 2004).

Statement of the problem

The influence of Information and Communication Technology (ICT) on sports and exercise in universities in Nigeria is a topic that warrants attention and investigation. While

ICT has revolutionized various sectors globally, its impact on sports and exercise in Nigerian universities remains largely unexplored. Therefore, it is crucial to identify and understand the specific challenges and issues surrounding the integration of ICT in Nigeria Universities.

Limited Access to ICT Infrastructure: Nigerian universities often face challenges in providing reliable and up-to-date ICT infrastructure to support sports and exercise activities. Insufficient access to computers, internet connectivity, and related technological resources hinder the effective utilization of ICT for enhancing sports training, data analysis, communication, and overall performance improvement. **Lack of ICT Integration in Sports Curriculum:** The incorporation of ICT tools and technologies within the sports curriculum is often inadequate in Nigerian universities. The absence of structured programs and courses that emphasize the integration of ICT in sports and exercise limits the development of necessary digital skills among athletes, coaches, and sports science professionals. **Inadequate Sports Data Management Systems:** Effective sports management relies on accurate and comprehensive data analysis.

However, many Nigerian universities struggle with inefficient and outdated data management systems. The absence of appropriate ICT solutions for capturing, storing, analyzing, and sharing sports-related data hampers evidence-based decision-making, talent identification, performance tracking, and strategic planning. **Limited Awareness and Training:** Insufficient awareness and training on the effective utilization of ICT in sports and exercise is another significant problem. Athletes, coaches, and other relevant stakeholders often lack the necessary knowledge and skills to leverage ICT tools for fitness tracking, injury prevention, performance analysis, and communication within the sporting community. **Financial Constraints:** The implementation and maintenance of ICT infrastructure require substantial financial resources. Nigerian universities, already facing budgetary constraints, may struggle to allocate adequate funds for acquiring and maintaining modern ICT equipment, software licenses, and related support systems, hindering progress in integrating ICT into sports and exercise.

Addressing these issues will be crucial in harnessing the full potential of ICT in Nigerian universities' sports and exercise programs. Overcoming the challenges will require strategic planning, resource allocation, curriculum development, training initiatives, and collaborative efforts between universities, sports authorities, and relevant stakeholders to create an enabling environment for the effective integration of ICT in sports and exercise in Nigeria Universities.

Research Hypothesis

1. There is no significant relationships in the types of ICT used in Sports and Exercise in Kogi State University, Anyigba.
2. There is no significant relationships in the challenges of using ICT in Sports and Exercise in Kogi State University, Anyigba.
3. There is no significant relationships in the possible solutions to the identified challenges of using ICT in Sports and Exercise in Kogi State University, Anyigba.

Methods

The descriptive survey design is adopted for the study. The population for this study comprises of all the sport men and women across each faculty in Kogi State University, Anyigba. Total enumerations were employed to select all the four hundred and ninety sports

men and women, including the weekend exercise performer. The descriptive statistics of mean and standard deviation were used to interpret the hypothesis and correlation to check if there is any significant relationship between ICT and Sport/Exercise. The sample size for this research work is 490 target audiences. Simple random sampling technique was used to select six out of eight faculties in Kogi State University. The following table shows how the questionnaires were distributed to the several faculties in their respective sports and exercise ground.

Faculties	Number of Questionnaire
Faculty of Education	90
Management Sciences	82
Natural Sciences	80
Social Sciences	78
Arts & Humanities	85
Law Faculty	75
Total	490

Validity and reliability of Instrument

The questionnaire was validated by three experts in the Department of Human Kinetics and Health Education, Kogi State University Anyigba. The face and content validity was satisfactory. A pilot study was carried out using 12 non athlete and exercise performer to ascertain the reliability of the test instrument (questionnaire) and to acquaint the researcher with test instruments and testing procedures. Cronbach alpha test was used to test using statistical package for social science (SPSS) and the reliability coefficient was 0.742. This value shows that the instrument is reliable.

Results

Table 1: Pearson (r) Analysis Showing types of ICT used in Sports and Exercise in Kogi State University Anyigba

Variables	No	Mean	Std	df	Cal. R-value	Crit. R-value	Decision
Types of ICT	490	3.295	.498	488	.608	.122	Rejected Ho
Roles of ICT in Sport	490	3.403	.386				

p ≤ 0.05

Table 1 above reveals that the calculated r-value is .608 while the critical r- critical value is .122 which is less than the calculated r-value at 488 degrees of freedom. Therefore, the hypothesis which states that there is no significant relationships in the types of ICT used

in sports and Exercise in Kogi State University, Anyigba was rejected and alternative hypothesis upheld meaning that, there is significant relationships in the types of ICT used in Sport and exercise in Kogi State University, Anyigba.

Table 2: Pearson (r) Analysis Showing challenges of using ICT in Sports and Exercise in Kogi State University Anyigba

Variables	No	Mean	Std	df	Cal. r-value	Crit. r-value	Decision
Challenges of using ICT	490	3.295	.522	488	.488	.122	Ho Rejected
Roles of ICT in Sport	490	3.403	.386				

p ≤0.05

Table 2 shows that the calculated r-value is .488 while the critical r-value is .122 which is also less than calculated r-value at 488 degrees of freedom. Therefore, the hypothesis which states that there are no significant relationships in the challenges of using ICT in sports and Exercise in Kogi State University, Anyigba was also rejected and the alternative hypothesis accepted indicating that roles of ICT in Sport and exercise really pose a challenge in the use of ICT in Sport and exercise in Kogi state University Anyigba.

Table 3: Pearson (r) Analysis Showing solutions to identified challenges of using ICT in Sports and Exercise in Kogi State University Anyigba

Variables	No	Mean	Std	df	Cal. R-value	Crit. R-value	Decision
Solution identified Challenges of ICT	490	3.338	.367	488	.244	.122	Ho Rejected
Roles of ICT in Sport	490	3.403	.386				

p ≤0.05

Table 3 shows that the calculated r-value is .244 while the critical r-value is .122 which is also less than calculated r-value at 488 degrees of freedom. Therefore, the hypothesis which states that there are no significant relationships in the possible solution to the identified challenges of using ICT in sports and Exercise in Kogi State University, Anyigba was also rejected and the alternative hypothesis accepted indicating that roles of ICT in Sport and exercise can improve the challenge in the use of ICT in Sport and exercise in Kogi state University Anyigba.

Discussion

Hypothesis one revealed that there are significant relationships in the types of ICT used in sports and Exercise in Kogi State University, Anyigba. This study was in line with Gillet, Vallerand, Amoura, & Baldes, 2012; Mouratidis, Vansteenkiste, Lens, & Sideridis, 2008) who says ICT influences learning and performance both directly and indirectly, through the impact of motivation on performance. In academics, psychological needs satisfaction and self-determined motivation have been shown to be mechanisms that underlie

the relationships between social factors and performance. This was also supported by (Elbourn & Cale, 2001; Wood, 2005) who says in the sport domain, because motor tasks mainly consist of mentally visualizing a process or a procedure to act, the visual animations embedded in ICT instructional tools can be considered as relevant means for execution that can exert a direct influence on motor performance.

Hypothesis two revealed that there is a significant relationship in the challenges of using ICT in sports and Exercise in Kogi State University, Anyigba. Meaning all tools should be available to curb these challenges. This was supported by Stanescu, Stoicescu, and Ciolca (2011) who reports that it will be a big setback if Physical Education teachers and sport/ Exercise instructors are not ICT compliant. The reports indicate that many do not still appreciate the use of ICT in teaching and learning also in line with that of Sansanwal (2009), and Stanescu, Stoicescu, and Ciolca (2011) which 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 and other Sport programmes more realizable. Other challenges include the availability of regular power supply, staff training and development on ICT software's; assessing software's and packages for teachers, crashing of computers and corruption of files amongst others.

Hypothesis three revealed that there are significant relationships in the possible solutions to the identified challenges of using ICT in sports and Exercise in Kogi State University, Anyigba. Meaning all this challenges posed in this study are realistic and could be solved. This was in line with Sansanwal, (2009), who 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 realizable

Conclusion

Conclusions were drawn from the study that: there are significant relationships in the types of ICT, there are significant relationships in the challenges of using ICT, and there are significant relationships in the possible solutions to the identified challenges of using ICT in sports and Exercise in Kogi State University, Anyigba.

Recommendations

Based on the findings of the study, it was recommended that;

1. The University Management should provide types of ICT relevant for each Sport for effective learning to take place.
2. The State and Management of the institution should train all Coaches, Lecturers and Sport personnel for optimal teaching to be disseminated
3. The University Management should make ICT available to lecturers and Sport/exercise instructors

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