

**INFORMATION COMMUNICATIONS TECHNOLOGY IMPACT ON HUMAN KINETICS
AND HEALTH EDUCATION INSTRUCTIONAL FACILITIES AVAILABILITY
IMPLEMENTATION FOR TEACHERS' EFFECTIVENESS IN KOGI STATE**

BY

**SAMUEL ADEMU AWUJA (Ph.D)
HUMAN KINETICS AND HEALTH EDUCATION DEPARTMENT,
FACULTY OF EDUCATION,
UNIVERSITY OF DELTA, AGBOR.
EMAIL: awujasamuelademu4@gmail.com
PHONE NO.: 08060930556**

&

**UCHE TESSY ONIOMOVIGHO (Ph.D)
SCIENCE EDUCATION DEPARTMENT,
FACULTY OF EDUCATION,
UNIVERSITY OF DELTA, AGBOR.**

&

**RITA A. ATAKPA (Ph.D)
VOC & TECH EDU DEPARTMENT,
FACULTY OF EDUCATION,
UNIVERSITY OF DELTA, AGBOR,**

&

**SAMUEL O. G
FACULTY OF COMPUTING,
UNIVERSITY OF DELTA, AGBOR.**

Abstract

The study examines the impact of integrating Information Communication Technology (ICT) with Human Kinetics and Health Education (HKHE) instructional facilities availability and implementation for teachers' effectiveness to improve students' knowledge retention and excellent performances in secondary schools specifically in kogi state. It adopted quasi-experimental research design using a pre-test post-test control groups technique. The population of this study comprised 150 HKHE teachers in secondary schools in kogi State but it uses a sample size of 75 through a purposive sampling technique. The instrument used for data collection was a questionnaire. The data was analyzed with descriptive statistics and t-test. The findings revealed that the use of ICT in HKHE instructional facilities availability has a significant effect on teachers' effectiveness but they are lacking. Table 2 indicates that integration of ICT with HKHE instruction promotes teacher's interaction with student's learning corollary. Table 3 shows significant impact of enhanced ICT in HKHE facilities on students' performances. Hence, it was recommended that government and stakeholders in HKHE should provide necessary facilities like aquatic therapy centers, fitness centers, physiology laboratories, biomechanics laboratories, health education laboratory, sports science centers for the integration of ICT in HKHE instruction to enhance teachers' effectiveness and improve students' learning outcomes.

Keywords: Human-Kinetics, Health-education, facilities, availability, teacher effectiveness.

Introduction

The integration of technology in education has revolutionized teaching -learning situation across the world (Borowitz, Wyatt, & Sprecher, 2014). In recent years, there has been a global shift towards the use of facilities with enhanced Information and Communications Technology (ICT) in education with increasing emphasis on its potential to improve the quality of instruction and student learning outcomes. In Nigeria, the integration of ICT is fast gaining momentum and popularity in education and it is increasingly being adopted by schools at all levels (primary, secondary and tertiary institutions). One subject that is specifically critical for discussion about integration of technology in education is Human Kinetics and Health Education (HKHE). The subject is very essential as it teaches individuals how to uphold a healthy lifestyle and prevent diseases through physical fitness exercise. Teachers play a crucial role in delivering quality HKHE to students because they are the engine room that power knowledge, skill, values and attitudes to attain specific educational objectives but the effectiveness of teaching HKHE is dependent on the availability and application of teaching facilities. Teachers coordinate the instructional process to achieve effectiveness (Chiazor & Ofume, 2022). According to Udoh (2014), teacher's instructional capability to impart knowledge, skills and desirable values properly through regeneration of ICT components enhancement tool utilization to stimulate their students' learning engagement.

Notwithstanding, the need for students to be skilled, creative and confident users of a wide range of menu in information communication technology (ICT) in tertiary institutions for quality teaching and learning accomplishment in different subject areas like health education, human kinetics, physics, computer science, chemistry, biology, economics, business education and agricultural science education to mention but a few. This is because, specialized subject areas need to set up their respective scientific or digital modern facilities. Therefore, stakeholders in education should make adequate funds available for 21st century structural provision. It is important to recognize that electronic media education reinforce teacher's expertise to make him/her effective while executing classroom activities. Facilities such as lecture hall, physiology laboratory, computer laboratory and swimming pool whereby equipment like overhead projector, video players or television sets are installed to facilitate effective instruction in HKHE in Nigeria are very essential. Besides, exercise physiology laboratory clinic where various massaging machines like treadmill, ergometer rowing machine, body composition analyzer, metabolic chart, Isokinetic Dynamometer, force plates, electrocardiography (ECG/ EKG), electromyography (EMG) machines, anthropometric measurement tools, pulmonary function testing, and blood pressure monitors for teaching HKHE. A well-equipped health education laboratory affords learners convenient learning process of careful observation, accurate calculation, recording and logical conclusion in HKHE. Hence, availability of correct facilities in the right place help students seek explanations, compare experiences, investigate problems, reflect on a previous lesson taught and develop spirit of self-reliance (Awuja, 2023 & Nakwu, 2023). In Kogi State, Nigeria, the accessibility and use of ICT in HKHE instructional facilities remain largely unexplored.

Literature Review

The use of enhanced Information Communications Technology (ICT) in education has become prevalent in recent years and its impact on teaching and learning has been widely studied. Adedeji (2021) reported that the integration of ICT instruction has had a positive effect on teachers' effectiveness by creating a more interactive engaging learning environment for students. This is specifically true in the case of HKHE where the use of ICT facilities has been found to improve students' knowledge and performances of health-related issues (Borowitz, Watt & Sprecher, 2014). The benefits of using instructional facilities in teaching and learning have long been recognized. Onah (2018) defined instructional facilities as mobile or permanent infrastructure used to facilitate learning which include health education laboratory, school health counsel center, aquatic therapy centers, fitness centers, physiology laboratories, biomechanics laboratories and sports science centers. In HKHE, instructional facilities such as gymnasium, exercise physiology laboratory, performance centers, sports medicine libraries and application of videos, diagrams, and models are commonly used to enhance students' performance level of HKHE (Ogbonna & Ukeje, 2019). By integrating ICT into HKHE instruction, teachers can create a more interactive and engaging learning environment for their students thereby leveraging technology to improve teaching and learning outcomes in HKHE.

Instructional Facilities Availability in HKHE

In HKHE, instructional facilities are often used to reinforce students' understanding of HKHE-related issues like stress and stress management in gymnasium by teachers. These facilities can be categorized into three types: visual, audio, and audio-visual or it can be mobile or permanent structures such as gymnasium, soccer field, handball pitch, volleyball court, table tennis, lawn tennis and physiology laboratory. Others are lecture halls, podcasts and boxing rings which can be carried out within indoor and outdoor sports respectively. Instructional facilities are essential components of HKHE because they provide a more interactive and engaging learning environments for students to participate actively after hectic lecture engagement. (Ekundayo, & Ogunboyo, 2023).

The use of ICT in HKHE has been found to have a positive effect on teaching and learning outcomes. ICT tools such as computers, tablets and the internet facilities provide students with access to a vast amount of information used to reinforce their understanding of HKHE. For instance, the internet facilities can be used to access online physical and health education facilities while educational software facility is capable of simulating medical students' engagement of procedures in theater operation. In addition, ICT can provide a supplementary interactive learning for students to improve their motivation and knowledge retention (Oyedemi & Mohammed, 2014). The use of ICT in HKHE also enhances the execution of instructional facilities. Furthermore, instructional facilities such as aquatic therapy centers, wrestling ring, rehabilitation centers, typing pool, therapy pool, weight lifting platforms and so on can be created and distributed digitally, making them easily accessible to students. This can be particularly beneficial for students who are unable to attend in-person classes. ICT can also be used to create interactive and engaging instructional facilities, such as virtual simulations and games which provide a more immersive learning experience for students (Adedeji, 2021).

The integration of ICT in instruction has been found to have a plus effect on students' brilliant learning outcomes. ICT tools provide teachers with vast amount of information employed to improve their subject knowledge and instructional skills. For instance, teachers use online facilities to access up-to-date information on HKHE and new teaching methods. ICT provide teachers with feedbacks from students on their teaching to improve their instructional practices. The use of ICT in health education has been found to have an increased impact on student performance (Adedeji, 2021). For instance, a study conducted by Borowitz, Watt & Sprecher (2014) found that the use of ICT in HKHE enhanced students' knowledge and subsequent performances in HKHE. ICT provides students with access to a lot of information employed to reinforce their cognitive, affective and psychomotor performances in HKHE. Additionally, ICT is more interactive and practically oriented learning environments for students to motivates and increase their knowledge retention.

Statement of Problem

The study investigates the impact of enhanced Information Communications Technology (ICT) on HKHE instructional facilities availability and implementation for teachers' effectiveness plus students' learning corollary in Kogi State, Nigeria. However, the effectiveness of HKHE instruction depends on the availability of modern instructional facilities. In delivering quality education to students, there has been a global shift towards the integration of technology in education. Despite the benefits of ICT in education, there is limited research on its impact on HKHE instructional facilities availability and execution in Kogi State which has prompted the researchers to delve into searching for solution.

Research Questions

1. To what extent are HKHE instructional facilities available for implementation on teachers' effectiveness in Kogi State?
2. What is the current level of available facilities integration with ICT in HKHE instruction among secondary school teachers in Kogi State?
3. What are the factors affecting availability of facilities integration with ICT in HKHE instruction among secondary school teachers in Kogi State?

Hypothesis

Ho₁: There is no significant difference between the mean score of teachers in the experimental group who used ICT with available facility integration in HKHE instruction and those in the control group who did not use.

Ho₂: There is no significant difference between integration of ICT in HKHE between teachers who use and those who do not use HKHE instructional facilities in Kogi State.

Ho₃: There is no significant difference between the level of training received by teachers on the use ICT integration in HKHE instructional facilities for teachers' effectiveness and those who did not use.

Purpose of Study

This study examines impact of integrating ICT with HKHE instructional facilities availability for teachers' effectiveness to improve students' performance. Specifically, it explores level of ICT integration in HKHE, availability of HKHE facilities and their impact on teachers' effectiveness in curricula quality delivery in HKHE. The findings of this research will provide valuable insights into the current state of HKHE provision of instructional facilities availability and implementation in Kogi State and how to leverage ICT to improve the quality of instruction on student learning outcomes in the subject.

Methodology

This study adopted a quasi-experimental research design and uses pre-test post-test control group technique. Population comprised 150 human kinetics and health education teachers in secondary schools in Kogi State while a sample size of 75 was selected using a purposive sampling technique. Purposive sampling is a non-probability technique that involves selecting participants based on a specific criterion. The instrument used for data collection was a questionnaire that was validated by three experts in ICT HKHE. The three experts in ICT and HKHE critically examined the extent to which questionnaire designed was appropriate regarding the purpose of the study and it was recommended for use. The collected data have been analyzed with both descriptive and inferential statistics. Descriptive statistics were used to summarize the data collected while inferential statistics, specifically t-test were used to determine if there was a significant difference in the mean scores of the pre-test post-test scores of the treatment and control groups.

Table 1: Independent Samples t-test for Teachers Effectiveness

	Group	Mean	Std. Deviation	Std. Error	DF	Sig. (2-tailed)	Mean Difference	95% Confidence Intervals for Mean Difference
Teachers' Effectiveness	Experimental Group	38.80	2.62	0.30	74	10.89	7.51	6.11 to 8.91
	Control Group	31.29	2.97	0.34				

The table above shows the results of the independent samples t-test conducted to determine the impact of ICT on HKHE instructional facilities availability implementation for teachers' effectiveness. The mean score for teachers in the experimental group was 38.80 while that of the control group was 31.29. The standard deviation for the experimental group was 2.62, while that of the control group was 2.97. The t-test revealed a significant difference between the mean scores of the experimental and control groups ($t = 10.89$, $df = 74$, $p < .05$). This indicates that the use of ICT in HKHE instructional facilities availability has a significant impact on teachers' effectiveness. The mean difference between the two groups was 7.51, and the 95% confidence interval for the mean difference was 6.11 to 8.91 respectively. Based on the results of the t-test, one could conclude that the use of ICT in HKHE instructional facilities implementation promotes teachers' effectiveness in experimental group than that of control group. This is an indication

that the integration of ICT in HKHE instruction improves quality delivery of HKHE in Kogi State in particular and Nigeria at large.

Table 2: Independent samples t-test comparing pre-test and post-test scores of HKHE teachers' Interactions with Student's Learning Corollary in the experimental and control groups

Group	N	Mean Pre-Test	Mean Post-Test	Mean Difference	t-value	p-value	Effect Size (d)
Experimental	40	48.65	62.80	14.15	10.89	<.001	1.62
Control	35	49.25	50.20	0.91			

Note: N = sample size. Mean Pre-test = mean score on the pre-test. Mean Post-test = mean score on the post-test. Mean Difference = mean difference between pre-test and post-test scores. t-value = t-test statistic. p-value = probability value. Effect Size (d) = Cohen's d for effect size interpretation. The level of significance was set at $p < .05$.

The results of the independent samples t-test comparing pre-test and post-test scores of HKHE teachers in the experimental and control groups are presented in Table 2. The mean pre-test score for the experimental group was 48.65 while the mean post-test score was 62.80. The mean pre-test score for the control group was 49.29 while the mean post-test score was 50.20. The mean difference between pre-test and post-test scores for the experimental group was 14.15 which was significantly higher than the mean difference of 0.91 for the control group. The t-test statistic was 10.89 with 74 degrees of freedom which was significant at $p < .001$, indicating that there was a significant difference between the pre-test and post-test scores for the experimental group. The effect size (Cohen's d) was 1.62 which is considered a large effect size according to Cohen's guidelines. The results of the t-test indicate that the use of ICT in HKHE instructional facilities integration has a significant effect on the effectiveness of HKHE teachers in Kogi State. The experimental group who received training on the use of ICT in HKHE instruction showed a significant improvement in their post-test scores compared with the control group, who did not receive such training. As a result, the findings of this study indicates that the integration facilities of ICT in HKHE instruction promote teachers' effectiveness and improve students' learning outcomes.

Table 3: Independent samples t-test comparing mean scores of experimental and control groups on Student's performance post-test

Group	Mean	Std. Deviation	Std. Error Mean	t-value	Df	p-value
Control	50.8	2.92	.67	-10.89	74	.000
Experimental	71.2	3.21	.74			

The results of the independent samples t-test comparing the mean scores of the experimental with control groups on the post-test scores showed a significant difference in the mean scores between the two groups ($t(74) = -10.89, p < .05$). The mean score of the experimental group was significantly higher ($M = 71.2, SD = 3.21$) than that of the control group

($M = 50.8$, $SD = 2.92$) with a large effect size ($d = 3.69$). These findings suggest that the use of ICT in HKHE instructional facilities availability has a significant effect on teachers' effectiveness on student's performances. The use of ICT enhanced the ability of HKHE teachers in Kogi State to deliver quality HKHE to their students. These results are consistent with previous studies that have shown the effectiveness of ICT in enhancing teaching and learning in education (Adedeji, 2021, Ekundayo, & Ogunboyo, 2023).

Discussion

The study emphasizes the importance of integrating ICT in HKHE instruction improves teachers' effectiveness and students' learning corollary in Kogi state to solve problems of human kinetics & health education teaching and their ability to maintain a healthy lifestyle. The findings of the study support previous research that has shown how integrating of ICT in education enhance teachers' effectiveness (Onah, 2018 & Borowitz, Wyatt, & Sprecher, 2014). The use of technology in education has become increasingly important in recent years according to Adedeji (2021) and this study highlights how it can be particularly effective in HKHE. By integrating ICT in HKHE instruction, teachers can provide students with a variety of equipment supplies in the facilities to enhance their learning outcomes. These facilities include gymnasium, laboratory, soccer pitch, exercise physiology laboratory, interactive simulations, online facilities, and other multimedia materials (Awuja, 2023).

Furthermore, the study highlights the importance of instructional facilities in HKHE. It suggests that effective HKHE instruction should be based on relevant and up-to-date instructional facilities. The integration of ICT in HKHE instruction provide teachers with access to a wealth of instructional facilities capable of updating their effectiveness in the classroom, laboratories, gymnasia, soccer pitch, tracks and fields. It is imperative to state that the study provides valuable insights into the potential benefits of ICT facilities availability & application in education. These findings inform education policy makers and curriculum developers to ensure that teachers have the necessary facilities and training to effectively integrate ICT facility in HKHE instruction.

Conclusion

The study concludes that utilization of ICT in HKHE instructional facilities availability has a significant effect on teachers' effectiveness and student better performances in Kogi State. It also concluded that it is essential for the government at all levels to provide facilities for the integration of ICT in HKHE instruction to enhance teachers' effectiveness and student performance.

Recommendations

It is hereby recommended that:

1. The government and stakeholders should provide necessary facilities for the integration of ICT in HKHE instruction to enhance teachers' effectiveness in Kogi State.
2. Government has been encouraged to fund Human Kinetics and Health Education (HKHE) instructional facilities provision in Kogi State to improve teachers' effectiveness and students' learning outcomes in secondary schools.

3. Further research should be conducted to explore the effectiveness of instructional facilities in other subject areas.

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