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Availability, Usability, and Effectiveness of Technological Gadgets in Teaching Sport Psychology for Sustainable Global Development in Tertiary Institutions

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Abstract
The advent of new technologies in the world has significantly altered the progression of sporting achievements; sports have become increasingly important for recording, analysing and optimising athletic performance. The integration of technological gadgets in teaching sport psychology has become increasingly prevalent in tertiary institutions globally, as those gadgets can provide tailored feedback to help athletes improve their performance. This study aims to explore the availability, usability and efficacy of such tools in facilitating the learning of sport psychology in tertiary institutions in the south west, Nigeria, with a focus on their contributions to sustainable global development. Three (3) research Hypotheses were formulated for this study. Purposive sampling technique was used to select twelve tertiary institutions i.e. two (2) from the six south-west States, while the simple random sampling technique was used to select three (3) teaching staff and twenty (20) students from the department of Human Kinetics and Health Education of the sampled institutions, making a total of two hundred and seventy-six (276) respondents. The researcher adopted a mixed-methods approach, incorporating both quantitative surveys and qualitative interviews; the study examines the perspectives of students and educators in tertiary institutions. Self-structured questionnaire with reliability coefficients of 0.75 was used for data collection. Analysis of Variance (ANOVA) was used to analyse the difference between the variables. Findings revealed that technological gadgets for teaching sport psychology are not available in some tertiary institutions, and that the integration of technological gadgets in teaching sport psychology holds significant promise for sustainable global development in tertiary education. Recommendations were made that the government should provide enough of these gadgets for effective use to teach sports psychology, amongst others.

Keywords: Technological Gadgets; Sports Psychology; Sustainable Development Goals; Virtual Reality; Augmented Reality

Introduction

In recent years, the integration of technological gadgets in teaching sport psychology has gained significant attention worldwide. Athletes can benefit from advances in engineering, material sciences, biomechanics, neuroscience, communication and information technologies. Scientists and engineers are developing technologies that are changing the way sports are practised, played, analysed, scored and watched (Fuss et al., 2013). Part of thus include ingestible computers (e.g. using thermometer pill to wirelessly transmit core body temperature to an outside computer), intelligent clothes, (e.g. embedding materials with electronics to measure biometric data), biomimicry,

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(e.g. imitating nature of inspiration, such as mimicking a gecko's toes to increase adhesive strength while moving), neurotechnology for monitoring and improving mental skills, (e.g. employing neurofeedback and transcranial direct current stimulation) and robotics, (e.g. facilitating the testing of the equipment and surfaces). These advances , according to Schack et al. (2014), mean that many sport-related factors can be tracked, monitored, optimised, refined and disseminated in creative and practical ways that can improve athletes' performance in their respective sports.

However, as the world moves towards sustainable global development, the role of tertiary institutions, particularly in countries like Nigeria, becomes paramount in shaping the next generation of professionals equipped with the necessary skills and knowledge. This literature review aims to explore the availability, usability, and efficacy of technological gadgets in teaching sport psychology within tertiary institutions in Nigeria, focusing on their potential contributions to sustainable development. Availability of technological gadgets in Nigeria's tertiary institutions has seen a gradual increase, albeit with certain limitations and disparities across institutions. The proliferation of smartphones, tablets, laptops, and interactive whiteboards has facilitated the integration of technology into educational settings. However, challenges such as inadequate funding, infrastructural deficits, and limited access to reliable internet connectivity persist, particularly in rural areas and less affluent institutions (Ogunsanya, 2020).

Despite these challenges, efforts have been made by both government and private stakeholders to enhance the availability of technological gadgets in tertiary institutions. Initiatives such as the National Universities Commission's (NUC) push for digitalisation and the provision of grants for technology-enhanced learning have contributed to improving access to gadgets in some institutions (NUC,2019).

The usability of technological gadgets in teaching sport psychology depends on various factors, including educators' technological proficiency, students' digital literacy, and institutional support structures. Studies have shown that when effectively integrated into pedagogical practices, technological gadgets can enhance student engagement, facilitate interactive learning experiences, and provide access to a wide range of educational resources (Ibrahim & Shittu,2018).

Educators play a crucial role in leveraging technological gadgets to deliver sport psychology content in innovative ways. Training and professional development programmes aimed at enhancing educators' digital skills are essential for maximising the usability of these gadgets (Adeyemi et al., 2020). Moreover, creating student-centred learning environments that encourage active participation and collaboration can further enhance the effectiveness of technological gadgets in teaching sport psychology (Babalola & Bada, 2019).

The efficacy of technological gadgets in teaching sport psychology is contingent upon their ability to facilitate meaningful learning outcomes and skill acquisition. Research suggests that the use of multimedia tools, interactive simulations, and virtual reality applications can enhance students' understanding of theoretical concepts and their practical application in sports settings (Akinpelu et al., 2021). Furthermore, technological gadgets offer opportunities for personalised learning experiences, allowing students to access learning materials at their own pace and revisit content as needed (Bamigboye et al., 2020). This adaptability can cater to diverse learning styles and preferences, ultimately contributing to improved learning outcomes and knowledge retention.

Statement of the Problem

Despite the growing importance of technology in education globally, the availability, usability, and effectiveness of technological gadgets in teaching sport psychology remain unclear. While technological gadgets such as wearable devices, mobile apps, and virtual reality platforms have the potential to enhance the learning experience and improve students' engagement, their adoption and integration into sport psychology education is still limited. The availability of these gadgets is often inconsistent, and their usability and effectiveness in teaching sport psychology concepts and skills have not been fully explored. Furthermore, the rapid evolution of technology creates a challenge for educators to keep pace with the latest innovations and to effectively integrate them into their teaching practices. Therefore, it is essential to investigate the availability, usability, and effectiveness of technological gadgets in teaching sport psychology to identify the benefits and challenges of their integration and to develop strategies for their effective use for sustainable global development.

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Aim and Objectives of the Study

The aim is to explore whether the availability, usability, and effectiveness of technological gadgets have any influence on the teaching of sport psychology for sustainable global development across the tertiary institutions in South-West, Nigeria.

Objectives:

1. Investigate whether the availability of technological gadgets makes a significant difference in the teaching of sport psychology for sustainable global development across the tertiary institutions in South-West, Nigeria.
2. Examine if the usability of technological gadgets has a significant influence on the teaching of sport psychology for sustainable global development across the tertiary institutions in South-West, Nigeria.
3. Determine whether the effectiveness of technological gadgets has a significant influence on the teaching of sport psychology for sustainable global development across the tertiary institutions in South-West, Nigeria.

Hypotheses:

1. Availability of technological gadgets will have no significant influence on the teaching of sport psychology for sustainable global development across the tertiary institutions in South-West, Nigeria.
2. Usability of technological gadgets will have no significant influence on the teaching of sport psychology for sustainable global development across the tertiary institutions in South-West, Nigeria.
3. Effectiveness of technological gadgets will have no significant influence on the teaching of sport psychology for sustainable global development across the tertiary institutions in South-West, Nigeria.

Methodology

The researchers adopted a survey research design. The population for the study comprises all human kinetics education students offering sport psychology courses in tertiary institutions in the South-West, Nigeria. Three (3) research Hypotheses were formulated for this study. Purposive sampling technique was used to select twelve (12) tertiary institutions i.e. two (2) from the six south-west States in Nigeria, while simple random sampling technique was used to select three (3) teaching staffs and twenty (20) students from the Human Kinetics Education students of the sampled institutions, making a total of two hundred and seventy-six (276) respondents. Mixed-methods approach, incorporating both quantitative surveys and qualitative interviews, was used. A self-structured questionnaire tagged 'Questionnaire on Availability, Usability and Effectiveness of Technological Gadgets' (QAUETG) was used for data collection. To ensure the validity of the instrument, the self-structured questionnaire was subjected to content and construct validity for clarity. For the reliability of the instrument, the reliability coefficient was obtained by calculating the correlation coefficient formula 'r', and 0.75 was derived. Analysis of Variance (ANOVA) was used to analyse the difference between the variables.

Results

Table 1: Analysis of Variance on availability of technological gadgets in the teaching of sport psychology for sustainable global development across the tertiary institutions in the South-West, Nigeria

Source	S.S.	DF	MS	F	*p*
Treatment	280.33	4	70.08		
Error	1082.46	1375	0.787	89.02	<.001
Total	1362.79	1379			

Error term used for comparisons = .79 with 1375 df, @=0.005

Table 1 shows the analysis of variance of the data collected from the respondents on hypothesis 1. It indicates the *f* value of 89.02, which is statistically significant as $p = 0.001 < 0.05$ at 1379 degrees of freedom, hence the rejection of the null hypothesis. This expresses that there is a significant difference in the availability of technological gadgets in teaching sport psychology in tertiary institutions in southwest Nigeria.

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Table 2: Analysis of Variance on the usability of technological gadgets in the teaching of sport psychology for sustainable global development across the tertiary institutions in the South-West, Nigeria

Source	S.S.	DF	MS	F	*p*
Treatment	491.2	4	122.8		
Error	609.79	1375	0.443	276.9	<.001
Total	1101.00	1379			

Error term used for comparisons = .44 with 1375 df, @=0.05

Table 2 reveals the analysis of variance of the data collected from the respondents on hypothesis 2, and it also indicates the calculated *F-value* of 276.9which is statistically significant as $p< 0.05$ at 1379 degrees of freedom, hence the rejection of the null hypothesis. This implies that there is a significant difference in the usability of technological gadgets in teaching sports psychology in tertiary institutions in Southwest Nigeria.

Table 3: Analysis of Variance on the effectiveness of technological gadgets in the teaching of sport psychology for sustainable global development across the tertiary institutions in the South-West, Nigeria

Source	S.S.	DF	MS	F	*p*
Treatment	232.76	4	58.19		
Error	377.53	1375	0.275	211.94	<.001
Total	610.29	1379			

Error term used for comparisons = .27 with 1375 d.f., @@=0.

Table 3 displays the analysis of variance of the data collected from the respondents on hypothesis 3, and it also indicates the calculated *F-value* of 211.94which is statistically significant as $p < 0.05$ at 1379 degrees of freedom, hence the rejection of the null hypothesis. This articulates that there is a significant difference in the effectiveness of technological gadgets in teaching sport psychology in tertiary institutions in southwest Nigeria.

Discussion

A result from the study found that there is a significant difference in the availability of technological gadgets in teaching sport psychology in tertiary institutions in southwest Nigeria. This indicates that there is a disparity in resource allocation among tertiary institutions, with some having more access to technological gadgets than others, which could be due to differences in funding, administrative priorities, or external support.

The findings of Johnes and Taylor (2019)on the correlation between the availability of technological gadgets and academic performance in tertiary institutions aligned with the results of this study. They found that institutions with higher availability of modern technological tools showed improved student engagement and academic performance. Smith and Jones (2020) findings on the disparities in technological resources across different tertiary institutions also corroborate the present study that private institutions tend to have better access to modern technological gadgets than public institutions. They also supported that teachers with access to advanced technological tools were more likely to adopt innovative teaching methods.

The study of Wanga and Li (2022) on digital divide in tertiary education also analysed the global digital divide in tertiary education, emphasising the significant differences in technology availability between developed and developing countries, and they observed that the need for policy interventions to bridge this gap is important in the present world.

All the reviewed studies indicate that academic establishments with better access to technological gadgets are likely to provide a higher quality of education, build stronger reputations for providing high-quality education, and attract more students and faculty. Conversely, those with fewer technological resources may struggle to provide the same level of educational quality, potentially disadvantaging their students, and may find it challenging to attract and retain both students and staff, affecting their overall reputation and growth.

Students at institutions with ample technological resources benefit from enhanced learning tools that can offer interactive, engaging, and up-to-date content. They are better prepared for modern, technology-driven work

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environments. They develop necessary digital literacy and technical skills. Whereas, students at under-resourced institutions may lack these critical skills, impacting their competitiveness in the job market and their readiness for further studies.

Faculty at well-resourced institutions have the tools to implement more dynamic and effective teaching strategies, which can improve learning outcomes, while those at under-resourced institutions may face challenges in delivering effective and modern education, relying more on traditional teaching methods. This could lead to reduced teaching efficiency and innovation. Addressing these disparities in the availability of technological gadgets is crucial for leveling the educational playing field and ensuring all students have the opportunity to benefit from modern, effective teaching tools.

Result from hypothesis two connotes that there is a significant difference in usability of technological gadgets in teaching sports psychology in tertiary institutions in South-west, Nigeria. This suggests that the technological tools available are not being utilized effectively or uniformly across different institutions. This could be due to factors such as varying levels of user proficiency, inadequate training, differences in technological infrastructure, or the suitability of the gadgets for educational purposes.

In support of the result of this finding, Schmid et al. (2014) study on effects of integrating technological tools, such as tablets and educational software, on student performance and engagement in higher education settings found that students who used technological gadgets performed significantly better in their courses compared to those who did not have access to these tools and they also highlighted the importance of interactive and multimedia resources in enhancing learning outcomes. Chiao et al. (2018) also corroborated that students' learning effectiveness and technology acceptance within the education system is a result of frequent used of technological gadgets to teach them. They further buttressed that interaction was an exogenous variable that has an indirect effect on technology use, implying the importance of interaction between people and devices within a digital tour environment.

This explains that learning environment where gadgets are not effectively utilised may experience lower teaching and learning efficiency. Students may not fully benefit from the potential enhancements that technology can bring to sport psychology education. Variability in the effective use of technology can lead to skill gaps among students, with some having advanced technological competencies while others lack basic proficiency. Gadgets that are not used effectively represent a waste of resources and investment. Poor usability might lead to underutilization or even abandonment of technological tools. Educators will also face challenges in integrating technology into their curriculum, which can affect their teaching effectiveness and innovation, and a lack of usability can lead to frustration among both faculty and students. Significant usability differences, as noticed in this study, can exacerbate educational inequities, where students at some institutions receive a superior education due to better use of technology.

A result from hypothesis three also reports that there is a significant difference in the effectiveness of technological gadgets in teaching sport psychology in tertiary institutions in South-West, Nigeria. In agreement with the result, Alhumaid (2019) supported that the effective use of gadgets such as laptops, projectors, and online learning platforms significantly improved students' understanding of complex concepts and their overall academic performance. Study of Semizand Ince, (2012) also found that while TPACK, TISE and ITOE perceptions of pre-service physical education teachers were at satisfactory levels, university instructors were not good role models in the use of technology in their classrooms. Pre-service teachers reported that integration of physical education and sport-related emerging technologies was almost non-existent in the teaching practices within the university setting. TPACK, TISE, and ITOE were moderately related to each other. Pre-service teachers' self-perceptions of TPACK, TISE, and ITOE were positively influenced by their perception of university instructors' technology integration into teaching in university courses. This indicates that there is a necessity for the technical know-how of integration and effective use of technology gadgets to disseminate knowledge in schools.

Njoku(2015) also supported that institutions with more effective use of technological gadgets are likely to offer higher-quality education, leading to better student understanding and engagement in sports psychology. Whereas, those at where technology is less effective may experience lower educational outcomes, potentially widening the

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gap in student competencies. Ullah and Anwar (2020) supported that effective technological tools enhance learning by providing interactive and engaging educational experiences, while ineffective use of technology can lead to student frustration, disengagement, and a lack of interest in the subject matter. The faculty at institutions with effective technology use are likely more proficient in integrating these tools into their teaching methods. Conversely, ineffective use of technology may indicate a need for improved faculty training and support. Ineffective use of technological gadgets represents a poor return on investment, with financial resources not translating into educational benefits. Institutions of learning need to reassess their technology strategies to ensure optimal use of available resources. Those with more effective technology use can build a reputation for innovation and quality, attracting more students and faculty, while those with less effective use may struggle to compete and maintain their standing in the academic community.

Conclusion

The study concluded that there is a disparity in resource allocation among tertiary institutions in South-West, Nigeria, for teaching sports psychology, with some having more access to technological gadgets than others. The technological tools available are not being utilised effectively or uniformly across different institutions, and their use varies significantly in their impact on educational outcomes. Addressing the reported disparities in the availability, utilization and effectiveness of technological gadgets for teaching sports psychology in tertiary institutions is crucial for leveling the educational playing field and ensuring all students have the opportunity to benefit from modern, effective teaching tools; thereby enhance the effectiveness of technological gadgets in teaching sports psychology, leading to improved educational outcomes, more engaged students, and a stronger academic reputation.

Recommendations

Based on the above findings, the study recommends the following:

1. Governments and educational authorities should allocate funds specifically for the technological upgrading of under-resourced tertiary institutions for teaching sports psychology in tertiary institutions in South-West, Nigeria.
2. Partnership with private sector companies could be explored to provide the necessary gadgets and technological support.
3. There should be regular conduct of comprehensive training programmes for sports psychology educators to enhance their ability to use technological gadgets effectively and implement continuous professional development initiatives, focusing on the integration of technology into the sport psychology curriculum.
4. Institutions of learning with technological gadgets should reassess their technology strategies to ensure optimal use of available resources.
5. Those with more effective technology use should build a reputation for innovation and quality, attracting more students and faculty, while those with less effective use should struggle to compete and maintain their standing in the academic community

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