

DETERMINANTS OF COMPUTER USAGE IN TEACHING/ LEARNING PROCESS OF PHYSICAL EDUCATION AMONG SECONDARY SCHOOL TEACHERS IN KWARA STATE, NIGERIA

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ABSTRACT

This study examined the Determinants of Computer Usage in Teaching/ Learning Process of Physical Education among Secondary School Teachers in kwara State, Nigeria. It employed the use of descriptive survey design, a population of 142 respondents was used for this study which is the total number of all Physical Education Teachers in Ilorin Metropolis. Three hypotheses were postulated and tested based on teachers' knowledge, administrative support and accessibility to power supply. The instrument used was developed by the researchers and validated by three experts in the department of Human Kinetics Education, University of Ilorin, Nigeria. Chi-square was used to test the inferential statistics of the study. It was revealed based on the hypotheses tested at 0.05 alpha levels that the teachers' knowledge, (cal. $r\text{-value} = 183.114 > \text{crit } r\text{-value} = 21.03 @ \text{df}=12$) administrative support cal. $r\text{-value} = 357.21 > \text{crit } r\text{-value} = 21.03 @ \text{df}=12$) and power supply (cal. $r\text{-value} = 179.21 > \text{crit } r\text{-value} = 21.03 @ \text{df}=12$) significantly influenced teaching/ learning process of Physical Education. It was recommended that teachers should be encouraged to undergo special computer training programme as it is paramount to teaching/learning process of Physical Education. Also, school administration should support the installation and incorporation of computer usage into

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teaching/ learning process to promote the teaching PE in secondary school. Stable power supply should be provided in schools for regular usage of computer system in class rooms.

Keywords: Administrative Support, Information Communication Technology, Knowledge, Power Supply

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1.0 INTRODUCTION

The world has witnessed a rapid increase in technological innovations in the 21st Century; the rapid development of modern Information and Communication Technology (ICT) has opened new possibilities for teaching-learning process in a different dimension. This era ushered in the advent of the electronic computer system among other modern technologies. The use of computers has influenced the secondary school curriculum, in the teaching and learning methods (Ema & Ajayi, 2006). Olufunmilayo (2014), defined computer as any machine or device which, under the control of a stored programme can accept data, process the data, and give the result as information in a specified format. Computer plays a significant role in making things easier for students in any field of life and

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it is increasingly becoming the solution to much learning problems and information exchange between teachers and students (Adesanya, 2006).

Bates (2011) stated that computer education started to become popular in educational policy making in the early 1980s' when relatively cheap microcomputers became available to the consumer market. Bates, further observed that towards the end of 1980's, the term computer was replaced by Information Technology (IT) signifying a shift of focus from computing technology to the capacity to store and retrieve information. This was followed by the introduction of the term ICT around 1992, when e-mail became available to the general public. The quality of teachers is known in virtually all countries to be a key predictor of student learning. Computer literacy among teachers in secondary schools helped them to take full advantage of the potential of technology to enhance student learning as well as their professional growth.

Teachers in Nigeria can acquire computer knowledge and become computer literate and effective. If a great percentage of the secondary school teachers are computer literate, many of the problems they encounter in computation of students' results and preparation of lesson notes could be minimized. The computer can keep adequate records of teaching assignments. The unimaginable memory capacity of computer makes it possible to store information and be able to retrieve it quickly. Regarding the difficulties in retyping the same document several times, once stored in the computer, editing could be done faster and more accurately.

Computers have introduced a new era in traditional methods of teaching and offering new teaching and learning experiences to both teachers and students (Viera, 2010). Most teachers in secondary schools focused on teaching only, using a set of qualitative measurement approaches such as classroom evaluation and real fact analysis. In order for the students to be well exposed to effective teaching, the teachers must be well informed about the use of computer in the school administration.

Effectiveness is an act of achieving stated goals and objectives by the teachers in teaching/learning activities at a given time (Viera, 2010).

The last few years have witnessed a steady increase in computer technology in various aspects of life. Majority of secondary schools in Ilorin metropolis are isolated from such development, as technology enjoys several advantages making it an ideal method to be used in proving the educational process and enhancing its quality. Acquisition of computer skills and knowledge by teachers can be employed to lesson preparation, delivery and assessment as well as other school activities.

Neglecting the use of computer in the teaching /learning processes will negatively affect the education system of any nation. Uma (2009) asserted that the use of computers is the latest and the most useful link in the use of hardware technology in the field of teaching and learning. Their use and application have almost revolutionized the field of education. The services rendered through computers are in the form of the utilization of multimedia, word processing, power point presentation, database management, retrieval and storage of information, access to internet.

However, there was an argument that the use of Computer Application Technology (CAT) in Physical Education and Sports can enhance effective teaching and learning process. One of the more challenging aspects of teaching motor skills is providing demonstrations which best guide students to optimal technique and performance. According to Julismah (2006), the part of the traditional teaching method is not sufficient and because of the lack of variety in teaching aids and creativity of the teachers, students' interest in Physical Education is becoming more and more deteriorated in secondary schools. Therefore, computer technology may be a solution as the students can learn independently and repeatedly in an interactive environment and in a meaningful way. Most of the presently used courseware for sports were developed based on general learning theory and did not consider psychomotor skills' learning theories (Wong, & Li, 2011).

Computer technology in the classroom has become an important aspect of successful teaching tools. It has triggered many researchers to investigate different aspects of such integration (Wood, 2008). This is because computer system assists students to learn more in less time and allows schools to focus on global learning environments if used appropriately. In addition, it could be an effective teaching tool when used to engage all students in the learning process (Almekhlafi & Almeqdadi, 2006). New and innovative approaches in computer technology have challenged traditional approaches. Computers provided many resources and opportunities that have brought about new tools, approaches, and strategies. The success of any initiatives to implement computer technology in an educational programme depends on the support and attitudes of teachers involved. It has been suggested that, if teachers believed computers not to be fulfilling their own or their students' needs, they are likely to resist any attempts to introduce computer technology into their teaching and learning (Edward, 2007).

Ocak and Akdemir (2008) expressed that teachers' computer literacy level is related to their computer use. Also computer literacy level of the teachers increases their integration of computer applications in their teaching. In the study, most of the teachers use Internet, e-mail, and educational software CDs as computer applications in the classrooms. Al-Oteawi (2002) found that most teachers who showed negative or neutral attitudes toward the use of ICT in education lacked knowledge and skill about computers that would enable them to make informed decision. A large number of studies showed that teachers' computer competence is a significant predictor of their attitudes toward computers (Berner, 2010). Several studies have been conducted that addressed the relationships between selected demographic variables such as teaching experience and subjects taught and usage of computer. One of such studies was (Zidon, 2002) who found weak relationship existed between years of teaching with computer usage. Zidon (2002) concluded that teachers teaching experience

does not eliminate computer phobias and many experienced teachers display some wariness, discomfort and/or mild anxiety in relation to computers.

However, Bransford and Brown, (2013) in their study noted that, the situation has been improving in the last few years. Schools are increasingly being equipped with computers for teaching, learning and administrative purposes; connectivity is improving and the students are enthusiastic about using computers for learning despite inadequate computers in the institutions (Bransford & Brown, 2013). United Nations Educational, Scientific Cultural Organization, (2009) further believe that under right administrative conditions, computers can have a monumental impact on the expansion of learning opportunities beyond cultural barriers and outside confines of teaching institutions.

Also studies have shown that various levels of leadership such as principal, administrative leadership and technology leadership influenced successful use of ICT in schools. This aspect of leadership will help the principal to share tasks with subordinates while focusing on the adoption and integration of technology in the school. Institutions exemplified by executive involvement and decision-making, strengthened by ICT plan, effectively adopt ICT integration curriculum (Wong, 2008). Jones (2010) reported that the breakdown of a computer causes interruptions and if there is lack of power or technical assistance, then the regular repairs of the computer will not be carried out which resulting in teachers not using computers in teaching.

Similarly, Yilmaz (2007) said it is also crucial to provide the schools with technical support with regard to repair and maintenance for the continued use of ICT in schools. Therefore, if there is no technical support for teachers, they become frustrated resulting in their unwillingness to use ICT (Tong, 2005). Even though, lack of technical support discourages teachers from adopting and integrating technology in classrooms, a study by Korte (2006) revealed that schools around the world have appreciated the significance of technical support to help teachers to integrate technology into

their teaching. They argued that ICT support in schools influence teachers to apply ICT in classrooms without wasting time troubleshooting hardware and software problems.

Computers in the classroom present physical education teachers with a great opportunity to provide learning materials to their students in new ways. Bauer and Kenton (2005) reported that most teachers who are highly educated and skilled, innovative and are adept at overcoming teaching obstacles might not have the knowledge of computer technology which is vital both as a teaching and learning tool. Teachers with more experience and skill in computers usage have greater confidence and advantage over their counterpart who may not buy the idea of incorporating computer into teaching learning process as this may be a disadvantage to teaching learning process (Peraltar & Costa, 2007).

1.1 STATEMENT OF THE PROBLEM

Secondary education system occupies a critical position in a state. It has the major responsibility of providing the resources that will lead students towards all round education development most especially, for students to be able to cope with the 21st century educational demands. It has been difficult for most secondary schools in Ilorin Metropolis, Kwara State to achieve this because of some factors which prevent the usage of computer in the teaching-learning process, in most secondary schools in Ilorin Metropolis such as: teacher's knowledge of computer usage, teacher's attitudes, availability of funds, cost of maintenance among others.

Despite huge efforts to position computer technology as a central tenet of teaching and learning, the fact remains that many schools make only limited formal academic use of computer technology in teaching of physical education (Selwyn, 2006). The researcher observed that majority of secondary schools in Ilorin metropolis are not making use of computer technology in the teaching learning process of physical education as this may be affecting and depriving the students the opportunity to

be familiar well prepared. Also, educational community that wants to grow fast must consider the injection of computer usage in the teaching-learning process most especially the teaching of physical education & sports is an integral part of total education process.

Considering the rate of technology advancements in the world, it is imperative for secondary schools in Ilorin metropolis to inject computer in teaching learning process of physical education. Availability of funds determines to a great extent the usage of computers in teaching learning process of physical education among secondary schools in Ilorin metropolis. It is observed that majority of physical education teachers of secondary schools in Ilorin metropolis are not used to computer technology as a major tool for the teaching-learning process, they teach with outdated aids often ignore the dissemination of knowledge with recent and relevant tools. The researcher observed that most of the materials use in teaching physical activities are not relevant and computers are not been utilized.

1.2 RESEARCH QUESTIONS

1. Will teachers' knowledge of computer usage determine teaching-learning process of physical Education among Secondary School teachers in Ilorin Metropolis?
2. Will administrative support towards computer usage determine teaching-learning process of physical Education in Secondary School in Ilorin Metropolis? Will Availability of funds determine teaching-learning process of physical Education in Secondary School in Ilorin Metropolis?
3. Will accessibility to power supply for computer usage determine teaching-learning process of physical Education in Secondary School in Ilorin Metropolis?

1.3 HYPOTHESES

1. Teachers' knowledge of computer usage is a significant determinant on teaching-learning process of Physical Education in Secondary School in Ilorin Metropolis.
2. Administrative support of computer usage is a significant determinant on teaching-learning process of Physical Education in Secondary School in Ilorin Metropolis.
3. Accessibility to power supply is a significant determinant on teaching-learning process of Physical Education in Secondary School in Ilorin Metropolis.

1.4 METHODOLOGY

A descriptive research design of survey type was used for this study. The population of this study comprised 142 public secondary school physical education teachers in Ilorin Metropolis (Kwara State Ministry of Education, 2017). A population of 142 respondents was used for this study which is the total number of all Physical Education Teachers in Ilorin Metropolis (Kwara State Ministry of Education, 2017). The use of 100% population is supported by Ogah (2013) that in a small population size less than 1000 half or all the population can be used. Purposive sampling technique was employed to select all PE teachers in secondary schools in Ilorin Metropolis.

The Instrument used in this study was a researcher structured Questionnaire consisting of items, eliciting information from respondents on Instrument tagged Determinants of Computer Usage in Teaching Learning Process in Physical Education. The Questionnaire comprised two sections A and B. Section "A" focused on demographic data of the respondents based on variables such as sex, years of experience, qualifications, while Section "B" consisted of structured items on determinants of computer usage in teaching/ learning process of Physical Education among Secondary School Teachers in Ilorin Metropolis A four-point likert scale of "Strongly Agree", "Agree", "Disagree" and "Strongly Disagree" responses was used for items on the Questionnaire.

Both content and construct validity of this instrument was ascertained with the help of the three (3) experts from Department of Human Kinetics Education, Faculty of Education, University of Ilorin, Nigeria. The comments, advice, corrections and critics of the experts were used to produce the final draft of this instrument.

To determine the reliability of the instrument, the researcher adopted test - retest method whereby 10 copies of the questionnaire were administered on a group of respondents two times at the interval of two weeks on PE teachers in Okoye Grammar school, Okuku, Osun State, Nigeria. The results obtained from the two tests were correlated using Pearson's Product Moment Correlation (PPMC). A coefficient of 0.76 was obtained which indicated that the instrument was reliable for the study. The Questionnaire was administered on the respondents by the researchers and with the help of three (3) assistants.

The data collected for this study was subjected to appropriate statistical analysis. The demographic data of respondents was analyzed using descriptive statistics of percentage and inferential statistics of Chi-square (χ^2) was used to test the postulated hypotheses at 0.05 level of significance.

1.5 RESULTS

H₀₁: Teachers knowledge of computer usage will not significantly influence teaching-learning process of Physical Education among Secondary School teachers in Ilorin Metropolis.

Table 1: Chi-square analysis showing teachers knowledge of computer usage in teaching /learning process of physical education among secondary school teachers in Ilorin metropolis.

N	df	Cal.value	Crit. Value	Remark
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142	12	183.114	21.03	H0 rejected
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P < 0.05 alpha level

Table 1 showed that the calculated Chi-squared value is 183.114 and the table value is 21.03 with the degree of freedom 12 at 0.05 alpha level. Since the calculated value is greater than the table value, the null hypothesis one is therefore rejected. This implies that Teacher’s knowledge of computer usage is important to teaching-learning process of Physical Education among Secondary School teachers in Ilorin Metropolis.

Ho2: Administrative support will not significantly influence teaching-learning process of Physical Education among Secondary School teachers in Ilorin Metropolis.

Table 2: Chi-square analysis showing administrative support in teaching/ learning process of physical education among secondary school teachers in Ilorin metropolis.

N	df	Cal.value	Crit. Value	Remark
142	12	357.21	21.03	H0 rejected

@ 0.05 alpha level

Table 2 showed that the calculated Chi-squared value is 357.21 and the table value is 21.03 with the degree of freedom 12 at 0.05 alpha level. Since the calculated value is greater than the table value, the null hypothesis three is rejected. This means that Administrative support significantly influence teaching-learning process of Physical Education among Secondary School teachers in Ilorin Metropolis.

Ho3: Accessibility to power supply will not significantly influence teaching-learning process of Physical Education among Secondary School teachers in Ilorin Metropolis.

Table 3: Chi-square analysis showing accessibility to power supply in teaching/ learning process of physical education among secondary school teachers in Ilorin metropolis.

N	df	Cal.value	Crit. Value	Remark
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@ 0.05 alpha level

Table 3 above shows that, the calculated Chi-square value is 179.21 and the table value is 21.03 with the degree of freedom 12 at 0.05 alpha level. Since the calculated value is greater than the table value, the null hypothesis three is therefore rejected. This implies that, Accessibility to power supply significantly influence teaching-learning process of Physical Education among Secondary School teachers in Ilorin Metropolis.

1.6 DISCUSSION

The tested hypothesis one which states that, teachers knowledge of computer usage will not significantly influence teaching/learning process of Physical Education among Secondary School teachers in Ilorin Metropolis was rejected. The significance of teacher's knowledge was supported by Tondeur (2008) who stated that Computer competence is defined as being able to handle a wide range of varying computer applications for various purposes. According to Bordbar (2010) Evidence suggests that majority of teachers who reported negative or neutral attitude towards the integration of ICT into teaching and learning processes lacked knowledge and skills.

The tested hypothesis two stated that administrative support will not significantly influence teaching-learning process of Physical Education among Secondary School teachers in Ilorin Metropolis was rejected. This shows that administrative support is an important aspect of teaching-learning process of Physical Education among Secondary School teachers in Ilorin Metropolis. The result of the finding is in line with the position of Yee (2000) believe that a leader who implements technology plans and also shares a common vision with the teachers stimulate them to use technology in their lessons. Lai (2004) suggest that for effective utilization of ICT by teachers, there is the need for a strong leadership to drive a well-designed technology plans in

schools. Lai further reported on the effect of ICT on teaching in basic schools in United Kingdom also stressed on significance of good leadership (Lai, 2013).

The tested hypothesis three which stated that accessibility to power supply will not significantly influence teaching-learning process of Physical Education among Secondary School teachers in Ilorin Metropolis was rejected. This shows that accessibility to power supply is an important aspect of teaching-learning process of Physical Education among Secondary School teachers in Ilorin Metropolis. This finding is in accordance with Jones (2010) who reported that the breakdown of a computer causes interruptions and if there is lack of technical assistance, then the regular repairs of the computer will not be carried out which resulting in teachers not using computers in teaching. This study examined the determinant of computer usage in teaching-learning process of physical education among secondary school teachers in Ilorin metropolis.

1.7 CONCLUSION

Based on the findings of this study, the following conclusions were drawn:

1. Teacher's knowledge of computer usage influenced teaching-learning process of Physical Education in Ilorin Metropolis.
2. Administrative support influenced teaching-learning process of Physical Education in Ilorin Metropolis.
3. Accessibility to power supply influenced teaching-learning process of Physical Education in Ilorin Metropolis.

1.8 RECOMMENDATIONS

The following were recommended:

1. Teachers should be encourage to undergo special computer training programme as its significant to teaching-learning process of Physical Education.

2. School administration should support the installation and incorporation of computer usage into teaching learning process to promote the teaching PHE in secondary school
3. Stable power supply should be provided in schools for regular usage of computer system in class rooms

REFERENCES

Adesanya, D.F. (2006), Comparison of Tutor Retrieval text, Computer Assisted Instruction, and Programmed Lecture in teaching Statistics to Physical Education Majors. *Dissertation Abstract International*, 51, 11

Almakhlafi AG, Almeqdadi FA (2010). Teachers' perception of technology integration in The United Arab Emirates school classrooms. *Educational Technology and Society*, 13(1)

Al-Oteawi, S. M. (2002). The perceptions of Administrators and teachers in utilizing information technology in instruction, administrative work, technology planning and staff development in Saudi Arabia. Ohio University.

Bauer, J., & Kenton, J. (2005) "Toward technology integration .in Journal the of Technology schools: and Teacher Why It Education, 13 (4) 110-121 Bates, A. (2011). The continuing evolution of ICT capacity: Implications for educational in G.M Farrell (ed.). The changing faces of virtual education. <http://ww.col.org/nirtualed/virtu al12pdfs>. retrieved 18th Sept. 2013

Berner, J. E. (2010). A study of factors that may influence faculty in selected schools of education in the Commonwealth of Virginia to adopt computers in the classroom. Doctoral Dissertation, George Mason University. Pro Quest Digital Dissertations

Bordbar, (2010) English F. teachers –assisted attitudes language learning” toward. *International Journal computer of Language Studies* 4, (3), 27-54.

Bransford, J. D., & Brown, A. L.,(2013) “How People Learn: Brain, Mind, Experience, and School”: Expanded Edition. Washington, D. C.: National Academy Press,

Edward, N (2007). Development and Integration of Web-based technology in distance education for nurses in China: A pilot study. <http://www.clerc.org/edwardsn>. Retrieved 15th August, 2013.

Ema, E. & Ajayi, D. T. (2006). Educational Technology: Methods, Materials, Machines. Jos: Jos University Press Ltd.

Jones, A.(2010) A Review of the Research Literature on Barriers to the Uptake of ICT by Teachers”. British Educational Communications and Technology Agency, 2004. Retrieved May 20, 2015 from <http://www.becta.org.uk>

Jones, A.(2010) A Review of the Research Literature on Barriers to the Uptake of ICT by Teachers”. British Educational Communications and Technology Agency, 2004. Retrieved May 20, 2015 from <http://www.becta.org.uk>

Julismah Jani (2006).Peranan Guru dalam Memacukan Pembangunan Sukan di Malaysia. Perak Universiti Pendidikan Sultan Idris. Available at: <http://www.freewebs.com/outdoorasia>

Lai, C. (2013). A framework for developing self-directed technology use for language learning. *Language Learning & Technology*, 17(2), 100-122.

Lai, K.W., Pratt, K. (2004) "Information Communication Technology (ICT) in secondary schools: The role of the computer coordinator". *British Journal of Educational Technology*, 35, 4, 1-54

Ocak, M. A., & Akdemir, O. (2008). An Investigation of Primary School Science Teachers' Use of Computer Applications. *The Turkish Online Journal of Educational Technology*, 7(4), 6.

Olufunmilayo, T. (2014). Spinning off an entrepreneurship culture among Nigerian university student; prospect and challenges. *African journal of Business Management* 1 (3) 115-119.

Peralta, H., Costa, F.A. (2007) "Teachers' competence and confidence". *Educational Sciences Journal*, regarding the use of clearing house. 3, 75-84,

Selwyn, J. P. (2006), ICT in pre-service teacher education in Portugal: trends and needs emerging from a survey. *Interactive educational multimedia*, (11), 153-167.

Tondeur, J., M. Valcke and J. Van Braak, (2008). A multidimensional approach to determinants of computer use in primary education: teacher and school characteristics; *Journal of Computer Assisted Learning*.

Uma, A. (2009), Academic learning time in senior secondary school physical education classes in Nigeria, *Journal of the International Council for Health, Physical Education, Recreation, Sport and Dance*. 36 (3), 51-54

Viera, K. (2010). Computer Science vs. Computer Literacy which to Teach? www.vkp.neu.edu

Wong, E.M.L. & Li, S.C. (2011) "Framing ICT implementation in a context of educational change: a multilevel analysis". *School effectiveness and school*

Wood, K. (2008). Digital immigrant teachers and digital native students: What happens to teaching. *Education Technology Solutions*, 54, 56-58.

Yee, D. L. (2000) “Images of school principals' information and communication technology leadership”. *Technology, Pedagogy and Education*, 9, no. 3,

Yilmaz, Y., & Granena, G. (2010). The effects of task type in synchronous computer-mediated communication. *The Journal of the European Association for Computer Assisted Language Learning*, 22(1), 20-38.

Zidon, S., & Miller, H. (2002)“Affiliations of attitudes and experience with need for learning computer skills”. *Journal of Research on Computing in Education*,

TELECOMMUNICATION DEVELOPMENTS IN TANZANIA

2007 TO 2016

Eliamani Sedoyeka

ABSTRACT

The constant changes in telecommunication industry has transformed the way human consume, create and share information. These changes have not only created competition amongst telecommunication operators but has also witnessed company disappearing, shrinking, expanding,