

## **Instructional Usefulness of ICT's as perceived by Lecturers in Technical Training Institutions in Kenya**

Peace Byrne Agufana, PhD

Murang'a University of Technology, Kenya

Email of corresponding author: [agufpis@gmail.com](mailto:agufpis@gmail.com)

Telephone No: 0727208268

### **ABSTRACT**

Information Communication Technologies (ICT's) is now the source of information used for instruction in our institutions of learning. Teacher education has received a big challenge as educators have to keep pace with the ever changing technology necessitating the reform of teacher education to re-invent educators for the future. The aim of the present study was to explore perceived instructional usefulness of ICT's by Lecturers in Technical Training Institutions (TTI's) in Kenya. The study adopted the quantitative research design. A sample size of 629 respondents was drawn from a total population of 2909 Lecturers in TTI's in Kenya. Data was collected using questionnaires. The quantitative data collected was analyzed using descriptive statistics. The findings indicated that Lecturers in TTI's perceived that use of ICT's is useful in instruction as it enhances and complements instruction. The study therefore, recommends that ICT's use in instruction be facilitated as it greatly impacts instruction.

**Key Words:** Instructional Use of Information Communication Technologies, Perceived Usefulness

## 1.0 Introduction

Technology basically involves the practical application of knowledge for a purpose. Technology also changes what people do and what they can do. Technology may also influence what people want to avoid doing (Spector 2016). Today the importance of educational technologies surpasses the use of instructional aids because of the ubiquity and usefulness of technologies in everyday life. It is now imperative for learners to be proficient at using technologies in order to adapt to the rapidly digitizing globe. Learners have to gain proficiency in using technologies early in life for them to be eloquent in its language. Educators must be prime movers in teaching this to young learners. Teachers must also learn to fully integrate technologies in their pedagogy and use it not just as visual aids but also as tools to engage learners (ProWritingAid, 30, October 2018). In this paper we are specifically concerned on how technologies can be used to enhance the teaching and learning processes.

Chauhan (2008) also affirms that there are hundreds of digital education tools that have been created with the aim of giving autonomy to the learner, improving the implementation of academic processes, promoting collaboration, and facilitating communication between teachers and learners. Additional tools for teachers and learners include: Socrative, projeqt, thinglink, TED-Ed, cK-24, ClassDojo, eduClipper, Storybird, Animoto, kahoot!, among others. More tools and Apps are also suggested that every teacher and student can use to aid and enhance the teaching and learning process. They include but are not limited to: Interactive Whiteboard, Smart Typewriter, AutoDraw, Book Creator, Creaza, Edmodo, FlipGrid, Formative, Illuminations, Newseumed, ProWritingAid, Quizalize, Write About, among others (ProWritingAid, 2008). These are just some of the many ICT's that educators can use in ensuring learners gain maximum benefit from instruction.

Technologies are already influencing people's lives. A lot of tasks are accomplished faster and easier by computers and the internet. Every aspect of life is slowly relying more on modern technologies. That is why it is necessary for the new generation, to be highly literate in using technology. Spector (2016) posits that new media have changed the ways that information can be designed and disseminated. New technologies have made possible learning activities that were previously not practical or feasible. New media and new technologies have changed the fundamental nature of how people learn and develop expertise. The things that primarily influence

learning include: prior knowledge; the time spent on a learning task; timely, informative, and supportive feedback; and of course the selection and sequencing of learning resources and activities.

Educational institutions and particularly instructors must be on the frontline in ensuring that they provide necessary skills to learners to adapt to the rapid digitalization that is emerging on the globe. Educators have the duty to adopt technologies and infuse them in their instructional practices. Learners must also be responsible for individually seeking learning and practice using the various available technologies.

In a recent Future lab review of research on teacher education, two different views on development of teacher training on digital technologies have been identified: retooling versus renaissance has been identified (Fisher et.al (2006). The first instrumental model (retooling) consists of digitalizing analogue processes in the same way you would retool an industrial production line. This is seen as limited since it only attempts to capture, copy, and disseminate elements of ‘good practice’ out of the context in which they were developed. It may appear to meet short-term needs, but does little to develop reflexive professionals capable of intelligent action in fast-changing contexts. The renaissance model, on the other hand, is a more comprehensive account of teacher development, as this is based on the strong involvement and empowerment of teachers to effect change. This second approach is the one that can be used to enable lecturers accept and adopt instructional use of ICT’s.

Prior empirical studies have strived to explicate the determinants and mechanisms of users’ adoption decisions on the basis of the Technology Acceptance Model (TAM) (Davis, Bagozzi, & Warshaw, 1989; Taylor & Todd, 1995; Venkatesh & Davis, 2000) with the conviction that the adoption process influences successful use of particular technology systems (Karahanna, Straub, & Chervany, 1999; Liao, Palvia, & Chen, 2009).

In East Africa, Zigama (2010) found out that primary school teachers on overall had a positive attitude towards ICT’s in education. Other studies conducted in Kenya on acceptance of instructional use of ICT’s include: Chemwei (2013) who found out that while ICT’s are integrated in primary teacher training colleges in Kenya, their level of integration is quite low; Wanjala (2010) who found out that teachers’ attitudes, self-confidence, perceived usefulness/relevance, accessibility, pedagogical practices and policy formulation were among the determinants to teachers computer technology use in mathematics education.

The adoption and use of ICT's in instruction have a positive impact on teaching, learning, and research. Instructional use of ICT's increases flexibility in learning & enables learners access instruction regardless of time and geographical barriers. Use of ICT's in instruction influences the way students are taught and how they learn. It has a profound impact on the process of learning by offering new possibilities for learners and teachers. These possibilities make available some of best practices and good well researched course material for use in the teaching learning process. It is now an accepted phenomenon that ICT's foster better teaching and better academic achievement of students in learning institutions.

Therefore it goes without saying that future learning environments must be supported, in one way or another, by ICT's. Globally, there is widespread adoption of ICT's in instruction. The youth have embraced the use of ICT's for learning purposes and this 'digital generation', are affected by this emerging phenomenon as learning cannot be complete today and in the future without use of ICT's.

From the above review, it is evident that little research has been done on Usefulness of ICT's in instruction in Kenya. Therefore, the researcher in this study tries to address this gap and aims at reporting on the usefulness of ICT's in instruction as perceived by lecturers in technical training institutions in Kenya. The findings of the study will provide insightful reference for educational policy makers, and would benefit a cross-section of education stakeholders, researchers, and scholars in Kenya. The study would also add knowledge to the area of educational policy.

The current study is guided by the Technology Acceptance Model (TAM) (Davis', 1989), which suggests that perceived usefulness and perceived ease of use are primary considerations used in determining how likely people are able to embrace or resist a new information or computer technology. The current study, it dwells more on the perceived usefulness of ICT's in the instructional processes. The aim of the study therefore, was to investigate the relationship between perceived Usefulness, and instructional use of ICT's in technical training institutions in Kenya. The specific objectives of this study were to: establish Lecturers ease of learning to operate ICT's; determine Lecturers' flexibility of interacting with ICT's; examine the mental effort required by Lecturers' to interact with ICT's; and assess the effort required by Lecturers' to become skillful at using ICT's.

## **2.0 Methodology**

This study was conducted on Lecturers in Technical Training institutions in the republic of Kenya. The research adopted the quantitative research design as it tried to identify broad trends in a population, and in the end generalize the findings over a large population who are Lecturers' in Technical Training institutions in Kenya.

The researcher settled on the quantitative research design for the present study because it seeks to gain insight into an occurrence as a way of providing information on the perceived ease of use of ICT's in technical training institutes which are many in Kenya.

The characteristics of the design were non-experimental and dealt with variables in their natural settings. According to Polit & Hungler (2004), research methodology is a way of obtaining, organizing and analyzing data and thus methodology decisions often depend on the nature of the research questions. In this study, the methodology refers to how the research was done and its logical sequence.

In the present study, all Lecturers in Technical Training institutions in Kenya were targeted to take part in the study as respondents. According to Burns & Grove (2003) population refers to all the elements that meet the criteria for inclusion in a study. In other words, population is the aggregate of all that conforms to a given specification.

Stratified random sampling was used to get representation from lecturers in Technical Training institutions across the country. Wimmer & Dominick (2006) support the use of stratifying in cases where respondents belong to identifiable subgroups, in order to give each person in the population an equal chance of being selected. Stratifying lecturers according to the regions they taught guaranteed the desired distribution across the country hence improved the representativeness of the sample.

To get the desired representative distribution across the eight (8) strata's, the following sample was drawn with respect to the actual population ratios of lecturers in Technical Training institutions as follows: Central (n=122); Coast (n=41); Nairobi (n=98); Rift Valley (n=148); Western (n=46); Nyanza (n=90); North Eastern (n=10); Eastern (n=74). The total sampled respondents were 629.

The researcher used a standardized questionnaire for data collection. The choice of the data collection instrument is often very crucial to the success of a research and thus when determining an

appropriate data collection method, one has to take into account the complexity of the topic, response rate, time and the targeted population. According to Parahoo (1997), a research instrument is a tool used to collect data. Research instruments are therefore useful to researchers because they help in data collection.

The research used questionnaires presented in structured and semi-structured questions and a four (4) point Likert scale. Likert scales are good because they show the strength of the persons feelings to whatever is in the questions, they are easy to analyze, they are easy to collect data, they are more expansive and they are quick (Kothari, 2004).

In data analysis, descriptive statistics (Percentages and frequencies) were calculated on the variables to summarize and describe the data collected. Quantitative data was displayed using appropriate tables that depicted the relationship between the dependent variable and the independent variables.

Inferences were made from the trends observed from the analyzed data and were used to reach conclusions and make generalizations about the characteristics of populations based on data collected from the respondents. This agrees with Hyndman (2008), who posits that data processing involves translating the answers on a questionnaire into a form that can be manipulated to produce statistics. This involves coding, editing, data entry, and monitoring the whole data processing procedure.

### **3.0 Results and Discussion**

The aim of the study investigated perceived Usefulness and instructional use of ICT's by Lecturers in Technical Training institutions in Kenya. The key perceived usefulness of ICT's factors of interest to the study was: quality of instruction; control over teaching; quick accomplishment of tasks; accomplishment of more workload; and enhancement of effectiveness during teaching. The following sections highlight the study results on these set of perceived usefulness of ICT's factors.

The first study item sought to establish whether lecturers felt that using ICT's improves the quality of instruction they gave. The study data revealed that 90% of lecturers agreed to this fact that instructional use of ICT greatly improved the instruction they gave as shown in Table 3.1.

From this research data, we can infer that ICT's use benefits instruction. This finding agrees with Cox et al, (1999); & Pedretti et al, (1995), who posit that from research conducted, teachers who

have a high value for ICT's and perceive it to be useful completely transform their teaching. In general, use of ICT's greatly improves instruction.

**Table 3.1: ICT's and Quality of Instruction**

	Frequency	Percent
Agree	502	90.0
Tend to agree	28	5.0
Tend to disagree	14	2.5
Disagree	14	2.5

Source: Field Survey (2019)

This questionnaire item sought to establish the level of control lecturers had over their instruction. Research data showed that 57.5% of lecturers agreed that using ICT's gave them greater control over instruction, while another 35% tended to agree, Table 3.2 shows the results.

We can infer the following from this research data. Firstly, ICT's is useful in instruction. Secondly, ICT's makes students attentive during instruction. Thirdly, ICT's use in instruction can revolutionize learning experiences. Fourthly, ICT's use motivates learning. This agrees with Mossom (1986), who posits that, the computer has become a motivating tool for teaching and learning in schools. In general, ICT's use improves control during instruction.

**Table 3.2: ICT's and Control over Instruction**

	Frequency	Percent
Agree	321	57.5
Tend to agree	195	35.0
Tend to disagree	42	7.5

Source: Field Survey (2019)

The study sought to establish whether using ICT's enables quick accomplishment of tasks. Research data revealed that 80% of lecturers agreed to the fact that using ICT's enables they accomplish tasks more quickly, while another 17.5% tended to agree to this fact. The research data findings are as presented in Table 3.3.

The result data leads us to infer the following. Firstly, use of ICT's can ease accomplishment of tasks. Secondly, ICT's use is time saving. In general, ICT's use improves the rate of accomplishment of tasks. This agrees with Corea (2000), who posits that there is need for a better solution to address digital inequality by fostering the "long-term nurturing of behaviors intrinsically motivated to engage with such technologies." In general, ICT use improves the rate of accomplishing tasks.

**Table 3.3: ICT's and Rate of Accomplishing Tasks**

	Frequency	Percent
Agree	446	80.0
Tend to agree	98	17.5
Tend to disagree	14	2.5

Source: Field Survey (2019)

This study item sought to establish whether using ICT's enables lecturers accomplish more workload. The study results as presented in Table 3.4 revealed that 52.5% of lecturers agreed to the fact that using ICT's enables they accomplish more workload, while a further 35% tended to agree to this fact.

From the above research findings, we can infer the following. Firstly, ICT's enables handling of more Workload. Secondly, ICT's use reduces work backlog. Thirdly, ICT's use enables efficiency at work. Fourthly, ICT's creates avenues for rest. Ertmer & Otterbreit-Leftwich (2010), suggest a solution to this when they observe that overall, implementing effective teaching with technology integration requires changes in teachers' knowledge, beliefs, and school culture In general, accomplished of tasks can easy with use of ICT's.

**Table 3.4: ICT's and rate of accomplishing Workload**

	Frequency	Percent
Agree	293	52.5
Tend to agree	195	35.0
Tend to disagree	14	2.5
Disagree	56	10.0

Source: Field Survey (2019)



This study item sought to establish whether using ICT's enhances lecturers' effectiveness. The study results as presented in Table 3.5 revealed that 80% of lecturers agree that using ICT's enhances their effectiveness, while another 12.5% tended to agree to this fact.

From this research data, we can make several inferences. Firstly, ICT's enhances school management. Secondly, ICT's improves traditional instruction processes. Thirdly, ICT's improves school curricula presentation. This agrees with Makau (1990) who posits that, apart from the traditional use of ICT's in education, it can be a vehicle for improving existing school curricula and school management processes.

**Table 3.5: Enhancement of Instruction through ICT's**

	Frequency	Percent
Agree	446	80.0
Tend to agree	70	12.5
Tend to disagree	42	7.5

Source: Field Survey (2019)

#### 4.0 Conclusions

The study sought to assess Perceived Usefulness and instructional use of ICT's by lecturers in Technical Training institutions in Kenya. Based on the findings of this study, it was concluded that, ICT's is useful in actualizing: quality instruction; greater control over teaching; quick accomplishment of tasks; coverage of more workload; and enhancement of effectiveness in instruction.

#### 5.0 Recommendations

From study results and conclusions, the following recommendations are made:

1. Lecturers should deliberately be encouraged to adopt and infuse ICT's in instruction as it makes their work easier; and
2. Lecturers are facilitated to use ICT's in instruction as it helps in covering more workload and enables them have greater control during instruction.

## References

- 13 Edtech Tools every Teacher and Student should know. Available at: <http://prowritingaid.com>  
Published on 30th October, 2018
- Burns, N. & Grove, S. (2003). *The Practice of Nursing Research: Conduct, Critique and Utilization*. Philadelphia: W. Saunders
- Chauhan, A. (March 31, 2018). 11 Digital Education Tools for Teachers and Students <https://elearningindustry.com/digital-education-tools-teachers-students>
- Chimwei, D. (2013). Factors Influencing Teacher Educators' Level of Information and Communication Technology Integration in Teaching in Primary Teacher Training Colleges in Kenya. PhD. Un-published Thesis, Moi University Eldoret
- Corea, S. (2000). Cultivating Technological Innovation for Development. *The Electronic Journal on Information Systems in Developing Countries*. 2(2), 1-15. <http://www.ejisdc.org>
- Cox, D., Little, J., & O'Shea, D. (1999). *Ideals, Varieties, and Algorithms: An Introduction to Computational Algebraic, Geometry and Cumulative Algebra*. New York: Springer
- Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, Sept 1989; 13(3), 319-340. <https://pdfs.Semanticscholar.org>
- Davis, F., Bagozzi, R., & Warshaw, P. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science*, 35(8), 982-1003
- Ertmer, P. A., & Otterbreit-Leftwich, A. T. (2010). Teacher Technology Change: How Knowledge, Confidence, Beliefs, and Culture Intersect. *Journal of Research on Technology in Education*. [www.iste.org/jrte](http://www.iste.org/jrte)
- Fisher, T.; Higgins, C.; Loveless, A. (2006) 'Teachers Learning with Digital Technologies: A Review of Research and Projects', *Futurelab Report Series No. 14*, Bristol: Futurelab. <http://www.futurelab.org.uk>
- Hyndman, D. (2008). *Introduction. Analog and Hybrid Computing*, 1-14. Oxford: Pergamon Press
- Karahanna, E., Straub, D., & Chervany, N. (1999). Information Technology Adoption Across Time: A Cross-Sectional Comparison of Pre-Adoption and Post-Adoption Beliefs. *MIS Quarterly*, 23, 183-213
- Kothari, C. (2004). *Research Methodology: Methods & Techniques*, (2<sup>nd</sup> Ed). New Delhi: New age International Publishers

- Makau, B. (1990). *Computers in Kenya's Secondary Schools*. Ontario, Canada: International Development Research Centre
- Mossom, M. (1986). Status of computer education in Natal Schools, University Lecture, delivered at the University of Natal, Pietermaritzburg, on 1<sup>st</sup> October 1986
- Parahoo, K. (1997). *Nursing Research: Principles, Process and Issues*. New York: Pelgrave
- Pedretti, E., & Hodson, D. (1995). From rhetoric to action: Implementing STS education through action research. *Journal of Research in Science Teaching* 32: 463-485
- Polit, D., & Hungler B. (2004). *Research Design and Methodology (6<sup>th</sup> Ed)*. Lippincott Williams and Wolkins ISBN 0787-15636
- Spector, J. M. (2016). *Foundations of Educational Technology: Integrative Approaches and Interdisciplinary Perspectives (2<sup>nd</sup> Ed.)*. New York and London: Routledge, Taylor & Francis Group
- Taylor, S., & Todd, P. (1995). Understanding Information Technology Usage: A Test of Competing Models. *Information Systems Research*, 6(1), 144-176. 137
- Venkatesh, V., & Davis, F. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46(2), 186-204
- Wanjala, M. S. M. (2010). Factors Affecting the Integration of Computers in Mathematics Instruction in Secondary Schools in Bungoma District of Western Province, Kenya. Ph.D. Unpublished Thesis: Moi University, Eldoret
- Wimmer, D., & Dominick, J. (2006). *Mass Media Research: An Introduction (8<sup>th</sup> Ed.)*. Boston: Wadsworth
- Zigama, C. (2010). Factors Affecting Primary School Teachers' Attitude towards ICT in Education in Rwanda. PhD Unpublished Thesis. Moi University, Eldoret

**ABOUT THE AUTHOR**

**Agufana, B. Peace (Ph.D.)** holds a PhD in Educational Technology and Media from Moi University, Kenya. Currently, he is a Senior Lecturer, and the founding Dean School of Education at Murang'a University of Technology (MUT). He has served as an Assistant Commission Secretary, Programme Accreditation, at the Commission for University Education, Kenya. He has also served as an Assistant Director Quality Assurance & Standards, in the Ministry of Education, Kenya. Under the Teachers Service Commission he served as a Lecturer. He is a Peer Reviewer for Education academic programmes with the Commission for University Education, Kenya. He has taken part in many peace education initiatives in Kenya, and also been a trainer of volunteer teachers. He has participated in many local and international conferences.