Abstract: The purpose of this study was to examine the influence of teacher related factors on integration of Information and Communication Technology (ICT) in public secondary schools in Narok North Sub-County. The study sought to establish how teachers’ training on ICT, age, and gender influence integration of ICT in public secondary schools. The study employed Everett Rogers’ diffusion of innovation theory. A descriptive survey method was utilized in this research. The target population comprised of 20 public secondary schools in Narok North Sub-County. The research targeted one Sub-County Quality Assurance Officer, 20 principals and 174 teachers. Therefore, out of the 20 principals a sample equivalent to 30% or 6 principals were selected randomly. Out of a target population of 174 teachers, 52 teachers which forms 30% of the population was randomly selected. Questionnaires were administered to the teachers while interviews were conducted on the principals and the Sub County Quality Assurance and Standards officer (SCQASO). The findings established that there was a significant correlation between training and technology literacy, knowledge deepening and knowledge creation. The level of training affects ICT integration in secondary schools. Based on the study findings it can be concluded that the gender of teachers influences technology literacy but it does not influence knowledge deepening and knowledge creation among teachers. The age of teachers influences ICT use which relates to technology literacy and also influence knowledge deepening and knowledge creation among teachers. The level of ICT training influences positively technology literacy, training and knowledge deepening and training and knowledge creation in ICT integration for teaching and learning. The study recommends that the Ministry of Education should monitor and support teacher training programmes in integration of ICT in secondary schools in Kenya.

Keywords: Teacher related factors, integration, Information Communication and Technology

I. INTRODUCTION

Modern cultures are progressively dependent on information and knowledge with digital information and communication technologies as main drivers (UNECO, 2017). This requires men and women who have Information and Communication Technology (ICT) abilities to deal with data, are imaginative and capable at critical thinking so as to enhance learning. Accordingly, one of the fundamental prerequisites for education in the twenty-first century is ways of getting students ready for cooperation in an information based economy (UNESCO Report, 2017). As from 2005, the interest for the integration of ICT in the educational programs has turned into a worldwide concern and of incredible significance towards accomplishment of the Education for All (EFA). As indicated by Miles and Singal (2010), ICT represents a wide range of kinds of electronic frameworks which incorporate LCD projectors, iPods, digital schools, Smart-sheets, fax machines, scanners, printers, advanced/camcorders, TV, radio, PDAs, DVDS, landlines, number crunchers and arrange and different PC programming, video conferencing, texting, web journals and email. At a global level, ICT incorporation in teaching in Europe is organized as a crucial method for instructive development and information change over the educational programs (UNESCO, 2011). In India, data and correspondence advancements have empowered the union of a wide exhibit of innovation.

At regional level, the Continental Education Strategy for Africa (CESA 16-25) emphasizes the need for ICT to develop access, quality and management. According to Hennessy & Wamakote, (2010), the overall strategy aspires to make another African resident that will identity a viable change agent for the continent’s sustainable development as foreseen by the 2063 Agenda. According to the report of the Southern Africa Regional Meeting on ICT in education, infrastructure provision to schools and institutions and capacity building for ICT integration are areas that Governments are focusing on. In Namibia, the Ministry of Education has embarked on to verify the computer skills of students and teachers in schools in Namibia, over the next 5 years (2017-2021) on adoption of International Computer Driving License (ICDL) certification program. In South Africa, it is a policy requirement to provide every teacher, manager and administrator with the skills, knowledge, and backing they require assimilating ICT in the teaching/learning of students, and a draft Development
Framework for Digital learning has been developed (UNESCO, 2017). According to Baskin and William (2006) absence of educator information about ICT, the absence of instructor proficient advancement in ICTs for instructing and learning and the absence of care staff to encourage reasonable expert improvement are a portion of the requirements and obstructions to ICT integrations. Further, Jacobsen (2004), note that instructors require proceeding with expert improvement as they think about what is intended to integrate ICT in learning situations. The instructor has a basic task to carry out in the integration of teaching and learning (Harris & Hofer 2011); Instructors need to create information of instructional method of ICT use to capitalize on ICT to help teaching and learning (Ertmer & Ottenbreit-Leftwich, 2013). Further, Ruthven, Howe, Mercer, Taber, Luthman, Hofmann & Riga. (2010) argues that the older teachers lack experience or fear usage of ICTs. The older feel apprehensive by the new innovations than the young group.

In Kenya, the vision 2030 stipulates Kenya’s goal to transform into a comprehensively aggressive and prosperous country with a high caliber of life (MOEST, 2013). According to the GOK (2012), the sessional paper Number 14 of the year 2012 notes that education shall be transformed to meet the 21st century needs for education and training through equipping the labour force with the necessary knowledge to partake and compete in the knowledge economy and at the same time attain Kenya’s educational goals. ICT is the gateway for learning of the 21st century skills and hence a rising urge for the education. A study conducted by Chemwei and Koech (2014) established that young teachers between 25-30 years of age appear to have greater interest in ICT. The young teachers show great enthusiasm in the adoption and usage of PCs in their daily life. Some researches however have conflicting information indicating that age has no influence on technology adoption. Ogembo, Ngugi, & Pelowski (2012) contended that the real utilization of innovation stays limited in spite of impressive development in the quantity of PCs obtained by the schools found in Kenya. According to Peeraer and Potegem (2011), teachers’ age can impact usage of ICT in teaching among educators especially the individuals who were conceived in the realm of advances or late adopters who got to innovations all the more as of late.

**Purpose of the Study**

The purpose of this research was to examine the influence of teacher related factors on integration of Information and Communication Technology in public secondary schools in Narok North Sub-County.

**Objectives of the Study**

The objectives of the study were:

i. To establish the extent to which training of teachers on ICT influence the integration of ICT in public secondary schools in Narok North Sub-County.

ii. To determine the influence of teachers’ age on the integration of ICT in public secondary schools in Narok North Sub-County.

iii. To establish the relationship between teachers’ gender and the integration of ICT in public secondary schools in Narok North Sub-County.

**II. METHODOLOGY**

A descriptive survey method was utilized in this research. The design was deemed appropriate for the study because it enabled the researcher to collect data from a large population within a short time. Questionnaires and interviews were used to collect data. Collected data was analyzed using both descriptive and inferential statistics and presented in tables, frequencies and percentages.

**III. MAJOR FINDINGS**

**Instrument return rate**

After data collection, out of the 52 questionnaires, 46 questionnaires were duly filled and returned representing 88.5 percent return rate. All the six principals sampled and the Sub-County Quality Assurance and Standards Officer availed themselves for an interview with the researcher. The return rate was perhaps influenced by the mood of the respondents, length of the questionnaire and the subject area under investigation.

**Gender of respondents**

The analysis presented in Table 1 shows the gender of the respondents.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>31</td>
<td>67.4</td>
</tr>
<tr>
<td>Female</td>
<td>15</td>
<td>32.6</td>
</tr>
<tr>
<td>Total</td>
<td>46</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The findings in Table 1 shows that 67.4 percent of the teachers were males while32.6 percent were females. The study findings denote that majority of the teachers in Narok North sub-county were males. This implies that there were more male teachers inclined to teaching than female counterparts in secondary schools and this calls for policy review in terms of two-third gender rule and recruitment of teachers in the sub-County by the Teachers Service Commission. The findings were in contrast with the findings of Bernat and Lloyd (2007) who found out in their study that women were more interested in the teaching profession than men.

**Findings based on research objectives**

The findings in Table 2 show the extent to which training of teachers on ICT influence the integration of ICT in public secondary schools.
Data contained in Table 2 shows that teachers agreed to different levels on the statements showing the influence of training on ICT integration in secondary schools. For instance, according to 56.5 percent of teachers, most secondary school teachers have basic computer training, while 41.3 percent disagreed that they do not use computer in teaching because they do not have adequate training. Further 58.7 percent strongly agreed that there are teachers in their school who have attended in-service training/workshops, and 65.2 percent who strongly agreed that computers enhance the quality of teaching and learning, while 39.1 strongly agreed that they can effectively teach using a computer because half of them had adequate training/ skills in ICT integration. This showed that most of the teachers had the capacity to integrate ICT.

According to the findings 73.9 percent of teachers strongly agreed that ICT training for teachers is important in imparting and improving teachers’ ICT skills, which was also backed by 45.7 percent of teachers who strongly agreed that training in ICT influence teachers’ readiness to use ICT, though, 58.7 percent disagreed that they incorporate ICT in preparing and in teaching their lessons, despite the fact that 45.7 percent strongly agreed that the knowledge gained from ICT training improves the presentation of work and the 50.0 percent who stated that ICT training skills has assisted learners to learn better and 58.7 percent who strongly agree that training on ICT integration has improved the quality of teaching/learning in my school.

The study findings showed that other than training there were other teacher–related factors that hinder secondary school teachers from integrating ICT because of the strong agreement that training helped in their preparation of lessons and other instructional processes. The findings implied that constraints like time, attitude and resources may have contributed to low integration of ICT. This disagrees with Wangari (2008) who notes that ICT integration suffers from lack or limited technical support in management and preventive maintenance. This suggests that schools do not have the required personnel or technicians and this makes ICT integration a difficult undertaking. Innovation is coordinated when it is utilized in a smooth way to help and stretch out educational programs goals and to draw in students in significant learning. During interviews with the SCQASO had this to say, “Some schools here lack technicians and laboratories for adequate in-service of teachers.” This implies that ICT integration in secondary schools is not an easy task owing to intra and extra school related challenges that face the education sector.

The analysis in Table 3 shows the influence of teachers’ age on the integration of ICT in public secondary schools.

Table 3 shows that 84.7 percent of teachers strongly agree and agree that the level of teachers’ age influence ICT integration. The findings concur with Peeraer and Petegem (2011) that teachers’ age can impact usage of ICT in teaching among educators especially among the individuals who were conceived in the realm of advances or late adopters who got to innovations all the more as of late.

Innovations than the young group.

To understand the influence of teachers’ age on technology literacy during ICT integration in public secondary schools, Pearson Correlation analysis was done. The results are presented in Table 4.

Table 4. Pearson’s correlation between age of teachers and technology literacy

<table>
<thead>
<tr>
<th>Technology Literacy</th>
<th>Teachers Age</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

www.rsisinternational.org
**. Correlation is significant at the 0.01 level (2-tailed). b. N = 46

Results in Table 4 show that there was a strong significant correlation between teachers age and technology literacy ($r=0.516$, $n=46$, $p<.05$). This implies that teacher’s age influences technology literacy among teachers in public secondary schools.

The results in Table 5 shows the influence of gender on the integration of ICT in public secondary schools.

Table 5: Influence of teachers’ gender on ICT integration

<table>
<thead>
<tr>
<th></th>
<th>Female</th>
<th>Male</th>
<th>All</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers who mostly integrate ICT in teaching</td>
<td>3</td>
<td>6.5</td>
<td>25</td>
<td>54.3</td>
</tr>
<tr>
<td>Teachers who own ICT facilities like laptops are mainly</td>
<td>1</td>
<td>2.2</td>
<td>25</td>
<td>54.3</td>
</tr>
<tr>
<td>Teachers who type their notes and exams using computers are mostly</td>
<td>28</td>
<td>60.9</td>
<td>17</td>
<td>37.0</td>
</tr>
<tr>
<td>Teachers who have ICT training are mostly</td>
<td>19</td>
<td>41.3</td>
<td>22</td>
<td>47.8</td>
</tr>
<tr>
<td>Teachers who have high interest in integration of ICT</td>
<td>12</td>
<td>26.1</td>
<td>30</td>
<td>65.2</td>
</tr>
</tbody>
</table>

Information contained in Table 5 showed that 54.3 percent of teachers indicated that males mostly integrate ICT in teaching, while 54.3 percent own ICT facilities like laptops. This showed that access to ICT facilities enhanced male teachers’ likelihood to integrate IT in pedagogical processes.

Additionally, 60.9 percent of teachers indicated that female teachers type their notes and exams using computers as compared to male teachers. However, the percent of male and female teachers trained in ICT was relatively equal. This showed that ICT training was not gender biased, though 65.2 percent of teachers indicated that male teachers had high interest in integration of ICT. The findings agree with Dorothea & Pervuda (2014) who contend that gender disparity starts from early tutoring when guardian’s support and offer young men better chances over girls. Omollo, Indoshi and Ayera (2013) contend that instructors’ preparation to receive and utilize technologies in teaching change starting with one gender then onto the next; among females and male educators.

**V. CONCLUSIONS**

Based on the study findings, it can be concluded that the gender of teachers influences technology literacy but it does not influence knowledge deepening and knowledge creation among teachers in public secondary schools. In addition, the age of teachers influences ICT use which relates to technology literacy and also influence knowledge deepening and knowledge creation among teachers in public secondary schools. Therefore, it can be concluded that older teachers do not integrate ICT during their pedagogical process a notion that is contrary with younger teachers. The level of ICT training influences positively technology literacy, training and knowledge deepening and training and knowledge creation in ICT integration for teaching and learning. The teaching experience influences technology literacy but does not influence knowledge deepening and knowledge creation.

**VI. RECOMMENDATIONS**

The following recommendations are made based on the study findings:

- The Ministry of Education should support teachers training in integration of ICT for both male and female teachers. This will enable them to integrate ICT in teaching thus enhancing students’ achievement.
- The Ministry of Education should provide adequate ICT facilities and resources to all schools, particularly provision of infrastructure and ICT components to all learning institutions.
- Teacher Training Colleges should ensure that ICT is integrated into the teacher education programmes to boost teachers’ preparedness during pre-service and to ensure that they adopt use of ICT at the classroom level.

**REFERENCES**


