Availability of Information Communication Technology Resources in Secondary Schools in Nandi Sub-County in Kenya

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Abstract
The study assessed Information Communication Technology (ICT) resources in secondary schools in Nandi North Sub-County. Descriptive survey design was used and the target population was drawn from among school management. There were a total of 43 principals/deputies and 215 teachers. Purposive as well stratified random sampling was used to select the sample. The data collection instruments used included questionnaires, interview schedule and observation. The author administered questionnaires to the same respondents twice after a period of two weeks and the findings were correlated using Spearman Correlation Coefficient and accepted at 0.7. Data collected was organized, analyzed, interpreted and presented using descriptive and inferential statistics. The findings showed that majority of the teachers in Nandi North sub-county consider computer Labs, Interactive radio instruction for in-service management, Laptops and use of internet as ICT resources in secondary schools. There was a significant difference on all ICT resources used in Secondary schools an indication that computer Labs, Interactive radio instruction for in-service management, Laptops and use of internet are considered by teachers as important ICT resources in secondary schools in Nandi North sub-county. The study recommends that. The government should ensure accessibility of computers to all schools in the country through partnering with other educational stakeholders to ensure that ICT can aid school managers in management of schools. The study is useful to school administrators and management of secondary school in highlighting areas of ICT utility to enhance effective management.

Keywords: availability, information communication technology, ict, resources, secondary schools, nandi sub-county, Kenya.

INTRODUCTION
With the advent of ICT revolution the whole world has seen remarkable progress. The use of ICT is vital in secondary school management. Management of secondary schools is crucial as it requires planning, supervision, controlling, monitoring and evaluation of school activities, especially in this era of high enrolment rates in schools, technology advance and globalization. With the use of ICT, school management becomes easier for the head teachers; however, in Nandi North sub-county, there have been marked delays in disbursement of Free Secondary Education Funds (FSEF) due to slow dissemination of information on enrolment to the Ministry of Education Headquarters (MOE, 2010). The previous FSEF records are also lacking in many schools and have posed a lot of challenges during monitoring of FSEF in the sub-county. The new online candidates’ registration is also posing a serious challenge to most schools as it is a requirement for each school to register their candidates online. The rapid result initiative by the Ministry of Education is also posing a serious challenge to most schools in the sub-county. Most of these challenges in secondary schools management can be solved with introduction and use of ICT in school management.

Effective use of ICT facilitates the management of schools in various ways. At school level, ICT can be used for curriculum management, classroom management, site management, financial management and personnel management. The role of management in undertaking integrated ICT change is a means for bridging the digital divide and empowering not only for individual students’ and teachers’ potentials within schools, but also education sector at large (NCST, 2009). ICT is therefore necessary for effective management of schools in terms of planning, curriculum management, financial management, personnel management and efficient service delivery. This paper therefore looked into ICT availability to help in the management of public secondary schools in Nandi North Sub-County.

The Ministry’s policy framework indicates that there are a number of challenges concerning access to and use of ICT in Kenya, including high levels of poverty, limited rural electrification, and frequent power disruptions (Ministry of Education, Science and Technology/Ministry of Information and Communication, 2006). Most secondary schools have some computer equipment; however, this could consist of one computer in the office of the school head. Very few secondary schools have sufficient ICT tools for teachers and students. Even in schools that do have computers, the student-computer ratio is
150:1. Most of the schools with ICT infrastructure have acquired it through initiatives supported by parents, the government, NGOs, or other development agencies and the private sector, including the NEPAD e-Schools programme. Surveys have shown there are challenges of ICT resources availability in most schools.

TYPES OF ICT RESOURCES IN SCHOOLS

Computers for Schools Kenya (CSFK)
The Vision of CFSK is to establish an information-rich Kenyan society which actively contributes to sustainable national development. The Mission of CFSK is to empower young Kenyans for life in knowledge-based society by facilitating the development of ICT infrastructure and capacity. CFSK aims to achieve these goals by facilitating the continuous development and maintenance of ICT infrastructure in management institutions and community access; building the capacity of both CFSK and our partner institutions to achieve our vision and mission; establishing strategic linkages with government agencies, corporate bodies and civil society organizations and actively participating in national policy formulation and implementation in the ICT Sector (Gachau, 2003).

Computer Labs at Resources
Another way of providing access to ICTs for teachers and education officers would be to develop local computer through District Resource and/or TACs. Online/electronic courses, foundation skills development, and training on Mathematics, Science, and Language content knowledge as well as Pedagogic Content Knowledge (PCK) activities can be delivered to support teachers through the. The lab model should closely resemble the Community Management (CLC) model. Like CLCs, these computer labs should be available to community members during school hours and available to teachers after school hours (Wolf, 2007). Sector partners can be invited to assist in the management of the labs and to deliver recognized ICT in education support activities at no (or reduced) cost to teachers. In exchange, sector partners are given access to the computer labs to deliver ICT training to community members for profit, thus addressing the key issue of sustainability.

Interactive Radio Instruction (IRI) for In-service Management
The most powerful use of radio as an in-service training device is to build training into IRI lessons. It is one thing to advise teachers on how to teach fractions, it is quite another to build teacher activities into a radio lesson that is teaching fractions to a classroom full of children. Radio can model the ways in which a teacher can introduce the concept of fractions, lead teachers through the process of explaining fractions in concrete terms, solve problems in the radio lesson, and then model different kinds of instructional practice, and show how to evaluate and assess student mastery of the concept and practice of using fractions. The teachers’ guide can then provide follow-up activities after the broadcast (Tull, 1993).

Computers in Secondary Schools Cluster
Capacity should be built at cluster schools and ICT readiness assessments conducted for classrooms. One way of doing this is to introduce the concept of “management circles” and project-based management. Management circles/stations are a powerful classroom management approach, especially for multi-grade classrooms, where the teacher organizes her classroom into 4-6 different stations that reinforce concepts in the curriculum through multi-modes of instruction. For example, to teach fractions in a multi-grade classroom, the teacher separates children into groups of 5-10 students, depending on the class size. The teacher uses manipulative like dice at one station for tactile management to reinforce concepts, has an older student teach the young students at the chalkboard for drill and practice, has a worksheet station for assessment of concepts that are in line with curriculum examinations, and then has a real-life application station. This will require development and support of content through KIE (Rosenberg, 2000).

Wireless access technology is highly recommended as it provides for flexibility and enables the computer lab to be brought to student and eliminates the need for new cabling. It also allows for cheaper security procedures as laptops on a wireless trolley could be locked in secure cupboard overnight (Omwenga, 2003).

Projectors and Interactive Whiteboard (IWB)
The IWB is a large interactive display that connects to a computer and projector. A projector projects the computer’s desktop onto the board’s surface where users control the computer using a pen, finger or other device. The board is typically mounted to a wall or floor stand. They are used in a variety of settings, including classrooms at all levels of education, in corporate board rooms and work groups, in training rooms for professional sports coaching, in broadcasting studios and more (Survillian, 2002).

LIMITATIONS OF THE STUDY
The study focused mainly on the principals/deputies and teachers of secondary schools in Nandi North Sub-County. These were chosen because they were easy to reach. Another limiting factor is that some respondents refused to answer questions or gave exaggerated information on the availability of ICT resources in their schools. Despite these limitations, the study provides a framework for assessing the state
of availability of ICT resources in schools and making appropriate recommendations.

MATERIALS AND METHODS

The study was carried out in Nandi North Sub-County of Rift Valley Province in Kenya. The sub-county is divided into three administrative divisions: Kabiyet, Kosirai, and Kipkaren. It is bordered by Nandi Central, Nandi South, Eldoret West, and West Pokot District. The main occupation of the residents is farming. Currently, there are 43 secondary schools in the sub-county. Descriptive survey design was used in the study.

The target population was drawn from principals/deputies and teachers in the three divisions on Nandi North sub-county. This research targeted 13 principals/deputies and 65 teachers members of school management across the three Divisions in Nandi North sub-county. The population was drawn from among school management. There were a total of 43 principals/deputies and 215 teachers. Purposive as well stratified random sampling was used to select the sample. Purposive sampling technique was used to select cases that had the required information with respect to the objectives of the study. In this case purposive sampling was applied to select schools with ICT and schools without in the three Divisions Nandi North Sub-County. Stratified random sampling was used to achieve desired representation from the three divisions in Nandi North sub-county.

The data collection instruments used included questionnaires, interview schedule and observation schedule. Data collected was organized, analyzed, interpreted and presented using descriptive and inferential statistics. The data was coded and entered into the Statistical Package for Social Sciences (SPSS) computer program for analyses and interpretation. The data was then analyzed using descriptive and inferential statistics. Descriptive statistics included frequencies, percentages and means. The inferential statistics involved the use of to test the significance of variables on use of ICT in the management of secondary schools at 95% confidence level.

RESULTS AND DISCUSSION

ICT Resources in Secondary Schools in Nandi North Sub-County

The research sought to find out the ICT resource available in secondary schools in Nandi North Sub-County. To ascertain this, the participants were asked to respond to the items on ICT resource and the findings were as shown in Table 1.

Table 1: ICT Resources in Secondary schools

<table>
<thead>
<tr>
<th>Response</th>
<th>Most Frequent</th>
<th>Very frequent</th>
<th>Frequent</th>
<th>Seldom</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freq.</td>
<td>%</td>
<td>Freq.</td>
<td>%</td>
<td>Freq.</td>
</tr>
<tr>
<td>Computers for schools in Kenya</td>
<td>15</td>
<td>22.1</td>
<td>6</td>
<td>8.8</td>
<td>15</td>
</tr>
<tr>
<td>Computer labs as a resource</td>
<td>11</td>
<td>16.2</td>
<td>5</td>
<td>7.4</td>
<td>9</td>
</tr>
<tr>
<td>Interactive radio instruction (IRI) for in-service management</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>8.8</td>
<td>10</td>
</tr>
<tr>
<td>Laptops</td>
<td>9</td>
<td>13.2</td>
<td>1</td>
<td>1.5</td>
<td>13</td>
</tr>
<tr>
<td>Desk tops</td>
<td>13</td>
<td>19.1</td>
<td>11</td>
<td>16.2</td>
<td>15</td>
</tr>
<tr>
<td>Use of internet</td>
<td>5</td>
<td>7.4</td>
<td>4</td>
<td>5.9</td>
<td>18</td>
</tr>
</tbody>
</table>

Source: Author, 2011

From Table 1, 21(30.9%) teachers have never received computers for schools as one of their resources while 15(22.1%) most frequently used computers for schools. On the computer laboratories as a resource, it was found that 22(32.4%) teachers had seldom used, 21(30.9%) had never used, 11(16.2%) frequently used, 5(7.4%) teachers used computer laboratories as a resource while 9(13.2%) teachers used computer laboratories as a resource on regular basis. This implies that the computer laboratories as an ICT resource is limited to only some few schools an indication that most schools have no access to computer laboratories. On the use of Interactive radio instruction (IRI) for in-service management, most of the respondents (48.5%) had never used it while only 6(8.8%) teachers had used it very frequently. This implies that the Interactive radio instruction (IRI) for in-service management has never been used by most teachers as an ICT resource in Nandi North sub-county. It was also established that 33(48.5%) teachers in the sub-county had never used a laptop as an ICT resource material and only 9(13.2%) teachers used it most frequently.

This indicates that a few schools have Laptops and therefore its use as an ICT resource is limited only to a few teachers. It was further found that 18(26.5%) teachers had never used a desk top in their schools as an ICT resource while 11(16.2%) used desktops as an ICT resource frequently, an indication that most of the schools have not acquired desktops for their schools. On the use of internet as an ICT resource, 33(48.5%) teachers had never used it in their schools while 4(5.9%) of the teachers used internet as an ICT resource.

To test on the significance of the ICT resources in Secondary schools, Chi-square analysis was computed on ICT resources available in secondary schools and the results presented in Table 2.
From Table 2, it was found out that computer Labs as resource, Interactive radio instruction for in-service management, Laptops and use of internet as ICT resources in secondary schools showed a significant relationship (p = .0000) an indication that most teachers in Nandi north secondary schools are in agreement that these are the most commonly used ICT resources available to them in their respective schools. Computers for schools in Kenya and use of Desktops as ICT resources showed no significant relationship. This indicates that majority of the schools in Nandi North Sub-County have not received computers for schools which are mostly in form of desk tops and therefore they have no access to ICT equipments.

The vision of Computers for Schools Kenya (CSFK) is to establish an information-rich Kenyan society which actively contributes to sustainable national development. Despite this, most schools in Nandi North sub-county lack these very vital resources and, therefore, the vision of computers for schools may not be achieved unless all the schools are provided with the computers. According to Gachau (2003), the mission of computers for schools, Kenya was to empower young Kenyans for life in knowledge-based society by facilitating the development of ICT infrastructure and capacity. From the study findings, this mission cannot be achieved wholly in most secondary schools in Kenya unless they are equipped with the computers.

**CONCLUSION AND RECOMMENDATIONS**

Most teacher respondents in Nandi North secondary schools are in agreement that the most commonly available ICT resources in their respective schools are computer Laboratories, Interactive radio instruction for in-service management, Laptops and use of internet. At the same time, majority of the schools in Nandi North Sub-County have not received computers for schools which are mostly in form of desk tops and therefore they have no access to ICT equipment. The vision of Computers for Schools Kenya (CSFK), that is, to establish an information-rich Kenyan society which actively contributes to sustainable national development, may not be achieved unless all the schools are provided with ICT resources like computers. There was a significant difference on all ICT resources used in Secondary schools, an indication that computer Labs, Interactive radio instruction for in-service management, Laptops and use of internet are considered by teachers as important ICT resources in secondary schools in Nandi North sub-county.

The government should ensure accessibility of computers to all schools in the country through partnering with other educational stakeholders to ensure that ICT can aid school managers in management of schools. Moreover, a study needs to be carried out on perception of head teachers and teachers of ICT application in management of secondary schools. This will also help inform the need to provide ICT instruments along with relevant information about their application. A similar study also needs to be carried out in an urban setting to compare the difference of availability and impact of ICT resources with the rural setting in terms of school management and the effectiveness of teaching/learning activities.

**REFERENCES**


MOE (2010)


