Analyzing Policy issues for the implementation of computers in Public Secondary Schools in Nyanza Province, Kenya

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ABSTRACT

The recent past has witnessed a huge investment in computer education in schools, colleges, and universities around the world. Research from developed countries indicates that the introduction of computers into school system came about as a result of the government policy pronouncement. Most of the policy statements were written documents and others were not documented for circulation to schools but are contained in the existing educational policies. In Kenya, computer fist appeared during the 1980s when private secondary schools and commercial colleges started computer literacy courses. However, in 1996, the Minister for Education announced that computer education would be taught in public secondary schools and all principals/head of secondary schools were expected to implement the policy by formulating their own school computer education policies. From the point of view of the Kenya Government, the main objective was to help large number of secondary school students to be computer literate. Since then, there has been no information whether Principals/Heads of Secondary schools in Nyanza Province formulated a school policy for the use of computers in teaching and learning. The purpose of the study was to examine and analyze the school policy issues regarding the introduction and use of computers in selected public secondary schools in Nyanza Province. The main objective of the study was to identify and determine the extent to which schools implemented computer policy in their schools, and to find out if schools developed computer policies in teaching and learning. The study was conducted in Nyanza province. It was based on descriptive survey design and was carried out in 25 Public secondary schools that had computers at the time of this research. The schools represented rural, urban and suburban areas. The participants included 14 male and 11 female principals. Data was collected by use of questionnaire, semi-structured interviews and documentary analysis. Data analysis combined qualitative and quantitative methods. The main research findings indicated that the Ministry of Education policy on the use of computers was being implemented by public secondary schools since the Ministry of Education policy automatically becomes the school policy. Most of the Principals 76% had a policy for the use of computers in teaching and learning.

Keywords: Computer, e-learning, Teachers, secondary schools, Principals, technology, implementation, policy

1. INTRODUCTION AND BACKGROUND INFORMATION

A policy is a statement of commitment by the government to undertake specific programs directed at the achievement of certain goals. It is a course /principle of action adapted or proposed by the government or business organization etc (Koech Commission 1999). Pillay (1999:240) offers another explanation and sees a policy as a statement adopted by the government to provide a uniform plan for action or a guide to action. It is a set of interrelated decisions concerning the selection of goals and the means of achieving them to this specific situation. However, whatever the definition , three things come out clearly, first

Why need for a policy?

Pillay (1999) states that a policy is developed to influence or shapes the way people behave and that polices are the results or outcome of some need, so the need must be clearly understood by those concerned. A policy document consists of a web of decisions and actions that allocate values.

As a notice to the people about the government plans for them, a government policy therefore becomes a public policy. It also becomes an instrument of governance on any issues, setting out a rationale basis for decision making about resources allocation and utilization. Using the policy statement, the public and any organ of civil society are able to call the government into action regarding resources allocation and utilization. This is especially essential in an environment where important social, economic and political changes are in play as in the situation in Kenyan Public Secondary schools with regards to the use of computers in teaching and learning. The Sessional paper No 1 of 2005 recognized this fact when it made its recommendation for Information Communication Technology (ICT) policy in Kenya (Kenya Government 2005). Therefore, policy development is a pre-requisite to any planned course of action.

The improvement of the effectiveness, efficiency, and equality of opportunity in public education has been an important object of state policy for many decades. The use of technology is already expanding at a significant rate and that technology is evolving rapidly hence the need for a national education policy and strategy facilitating the most effective use of technology by schools and students. Computer technology can clearly assist schools and the nation generally, to more effectively meet many of the goals contained in the legislation. Perhaps most important
is the goal that calls for students to possess demonstrated competency in challenging subject matter and be prepared for productive citizenship, continued education, and productive employment.

The need to formulate a clear policy for use of educational technology in teaching and learning has been emphasized by many scholars (Clerk 2000, Crawford 2000, Kim & Lee 2001, Pearson 2000). The question of policy guidelines for the implementation of computer technology in teaching and learning has been an issue that runs through all educational sectors in developed and developing countries. Rudd (2001: 212) feels that it is the responsibility of educational researchers and practitioners to evaluate such policies vigorously in meaningful ways.

Why policy analysis?

According to Ham and Hill (1984: 11) “the purpose of policy analysis is to draw on ideas from a range of disciplines in order to improve the causes and consequences of government action; in particular by focusing on the processes of policy formulation.”

affected him as a person and he saw it as his own project rather than seeing it as a problem for the whole country. Even when the resources for the implementation were not available, he made sure that the program was a success story. He believed that all was well. So it was power together with personal involvement that made the 8.4.4 system of education a reality.

That’s why (Call 1988) says that, analysis of policy can also take two different forms such as:

- analysis of policy determination and effects, which examines the inputs and transformational processes operating upon the construction of public policy and also the effects of such policies on various groups
- analysis of policy content, examining the values, assumptions and ideologies underpinning the policy process.

Nevertheless the report from relevant literature indicates that, the introduction of computers in the school environment in many countries came about as a result of government policy pronouncement (Clark 2000, Crawford 2000, Kirkman 2000, Kim and Lee 2001). Most of the policy statements were written documents and others were not documented for circulation to schools, but were contained in the existing educational policies. Person (2000: 279: 290) reports on various government policies on the use of computers and noted that the American government formulated computer policy in 1996 titled “Getting America’s Student ready the 21st Century. The policy document included the provision of computers in schools was in the ratio of one computer to ten students. Other reports indicated that most states in USA require teachers to be computer literate. Zhao and Cziko (2001: 6) report that “Title 5 Regulation in Section 441617 of the California Education code (California Legislature 1997) requires teachers to take an educational computer course”. In Australia, Person (2001) reports on the government policy document on the use of computers that was entitled “Learning Technologies in Victorian Schools”. The Australian government was committed to improving teaching and learning through the use of appropriate computer technology and computers are available in schools to the students’ ratio of 1 computer to each 12 students. Similarly Russell et al 2000: 158) noted that the Australian Computer Education policy recognized the importance of teacher education in computer technology. Russell et al (2000) noted that one of the State Education Department (Education Queensland 1999) developed the Minimum Standards Project (Education Queensland 1999) for teachers using IT”. The standard requirement was that “all teachers were to have a minimum level of skills in the use of computers for learning”. In addition, the Australian Council for Computer Education ACCE 2000, developed a rationale for the specification of teachers learning technology competencies (TLTC) by teachers. The policy of ACCE suggested that teacher “professional development programme should aim at improving teaching practice first and foremost outcome with a goal of improving learning outcome for student (Russell et al 2000: 158).

In Britain Person (2000) reports about availability of the British government policy document titled “Connecting the Learning Society, National Grid for Learning in 1997”. Opic and Katsu (2000: 80) add that since 1980s the British government policy on the use of computers in schools was to ensure that each school had computers. So teachers were trained in their use. About 230 million pounds was set aside for ICT training of teachers and resources were also provided to ensure it was successfully implemented in UK Schools. Opic and Katsu (2000) noted that the Statutory Curriculum for England and Wales consistently emphasized the incorporation of computers. Even the revised National Curriculum that was to be implemented in 2000 stated that “Pupils should be given opportunities to apply and develop their ICT capability through their use of ICT tools to supplement their learning in all subjects”.

The discussion about the policy for computer education is usually centered in curriculum implementation. Crawford (2000: 183) reports on a National Curriculum for England introduced in secondary schools that contained an order for computer technology and emphasized the teaching of IT as a discrete subject. National Curriculum Order supported advisory documents that included policy guidelines such as the School Curriculum and Assessment Authority (SCAA 1995), National Council for Educational Technology NEC 1995; Department of Education and Employment 1998 continue to stress the value of IT throughout the school curriculum. All these policy guideline documents on the use of computers in secondary schools
demonstrated the commitment of the UK government to the use of computers in schools. Furthermore, from Hongkong, Person describes a five year Hongkong government policy document entitled information for learning in a new era five-year strategy 1998/1999 to 2002/03. Person (2000) noted that the policy was formulated because the government was concerned with the adoption and use of computers in schools to widen opportunities for learning, to improve the motivation of learners, and to increase level of student’s achievements. The five-year policy strategy consisted of various policy initiatives to promote the use of computers. The first policy plan was to provide each secondary school with 82 computers. The second was all schools were to have access to the Internet and schools were provided with funds for training teachers in computer skills so that by 2001, all teachers would have basic skills in computer literacy. Teachers were also expected to be competent in the use of computers. The policy also included the appointment of computer coordinator.

To highlight the importance of a policy on computers in education, Rovisk and Kommune (1995: 856) report that in 1984 the parliament of Norway approved a white paper No. 39 (193/8) which introduced computer technology into schools. Rovisk and Kommune (1995) noted that a ministerial task force was established to organize and coordinate the computer programme. The purpose of the task force was to make plans for the introduction of compulsory computer education in schools. The policy referred to the teacher training, vocational computer provision for computers and by 1987 the government adopted compulsory computer education.

Waslowick (2002: 69) report on the Brazilian Government Information Communication Technology (ICT) policies and implementation published in 1981. The Ministry of Education and the Secretary of Information created the first National ICT project in 1983 to introduce computers in schools. The project was implemented in several centers in different states in order to develop qualified people to deal with computers in education. The main objectives of the project was to:

- Commit the schools to use computers.
- To install appropriate computers and network facilities.
- To train teachers in computers.
- To produce high quality educational software for use in schools.
- To interconnect schools.
- To provide financial support for ICT project.

According to Waslowick (2002: 69), the project was to be implemented in two phases. The first stage aimed to introduce students and teachers to computers and in the second stage the computer was to be incorporated in the teaching and learning process and in school administration.

UNESCO (2002: 30 – 31) reports of a Malysian government policy document known as “Education for Smart Schools” that was formulated to develop ICT and was to be implemented in stages. The “smart schools” project had five main goals: to develop individual child covering the intellectual, physical, emotional and spiritual domain; provide opportunities for the individual to develop their special strengths of abilities; to produce a thinking working force that is technically literate; demonstrate education to provide equal access to students to learn with computers and to involve parents of the children, private sector, and the community in ICT education process. UNESCO (2002) noted that government had a plan to convert all schools to “smart schools” by the year 2010, and the first phase implemented began in 1999 as a pilot project in 90 schools. UNESCO (2000) stated that the pilot project consisted of: Preparing computer materials for teaching and learning of four subjects (i.e. Bahasa Malaysia, English language, Science and Mathematics), and assess to give were accurate and comprehensive feedback of students process in computer education; and in management system in which computers were to be used to improve school administration was also included. UNESCO (2002) report indicated that the implementation plan comprised of integrated education with emphasis on thinking, language and value across the curriculum, students to learn at their own pace, teachers to be facilitated of learning rather than pouring all the knowledge, and learning being self – directed.

**2. INTRODUCTION OF COMPUTER EDUCATION POLICY IN KENYAN SECONDARY SCHOOLS**

Computer education was first introduced in public secondary schools in 1996 so that the students could learn computer literacy skills. The decision by the government to introduce computers in public secondary schools was influenced by two major educational resolutions and policies. The first was in 1996 when the Ministry of Education announced that it had approached UNESCO to fund the project and train secondary school teachers to teach computers skills. The second was when the Ministry of Education published a policy and curriculum guidelines in 1997 approving the teaching of computer education in secondary schools and announce that the subject would be examined in 1998. The Ministry of Education noted that computer education was to be included in the school timetable and teaching materials like the computer syllabus were to be developed at the Kenya Institute of Education and supplied to schools. Physical facilities like computer laboratory were also to be put up by the schools. The report further indicated that implementing computer technology in public secondary schools would require trained teachers, bring about widespread changes in the schools, teaching strategies and teachers beliefs about the new technology.

Following recommendations of the Koech report in 1999, the government through the Ministry of Education formulated a policy Framework for Education Training and Research (Sessional Paper No 1 of 2005). In this paper the government outlined its plan for the governance of the educational sector in
the 21st century. The paper included a discussion on information Communication Technology (ICT) in the policy draft. In the policy framework, the government recognizes that the overall goal of education is to achieve education for all by 20015, so the Ministry of Education set a number of specific objectives to be achieved. The most important and relevant was to promote and popularize ICT in schools as well as Science and technology education by 2008. Consequently, the government made education the natural platform for equipping the nation with ICT skills in order to create a dynamic and sustainable economic growth and formulated a national ICT policy. The draft policy document on ICT was debated by stakeholders and then tabled in Parliament for adoption and eventual enactment by an act of Parliament on ICT.

Once this was done it would pave the way for widespread use of ICT in Secondary schools and in other institutions of learning. It was noted also that education sector has a major role to play in the implementation of ICT policy. First, the sector itself has many students and teachers and some of them are already using computers. Second, success in the use of ICT in all sectors will require sufficient and competent human resources that are well developed and equipped in the education and training sector. Third, successful introduction and use of ICT in education and training institutions will play a major role in disseminating skills to the wider society and thus create positive impact in the economy. To facilitate faster dissemination of ICT skills in the country, the Ministry of Education was expected to facilitate the use of education institutions as hubs of ICT in rural areas. The further noted that ICT has a direct role to play in education and if appropriately used, ICT could bring many benefits to the classroom as well as to education and training process in general.

A crucial part of my research was to examine the implementation of the government policy on computer education in public secondary schools and to analyze how effectively this policy was being implemented. This included examining the availability of school policy, reasons and specific steps taken to implement the policy, and access to relevant computer materials teaching and learning computers. To do this, it was necessary to get the information from the Principals because they are the ones to implement government policies related to educational matters in their schools.

3. METHODOLOGY

Research Design

This study used descriptive survey design that encompasses both quantitative and qualitative methods to collect data and analysis. The design was chosen because of its appropriateness in educational research findings that yield accurate information. Structured interview and questionnaire was the main instrument used to collect data.

Area of Study

The study was conducted in Nyanza Province in Kenya. It is one of the eight provinces in country. It borders Rift valley Province to the North, Western Province to west Lake Victoria to south and Tanzania to the southern part. The Province has over five hundred secondary schools at the time of this research and thirty had computers but only twenty-five of them used computers for teaching and learning.

Study Population

The study focused on 25 secondary schools that had computers at the time of research. This included 14 boys, 11 girls and one-mixed secondary schools. The targeted population consisted of 25 principals.

Sample and Sampling Technique

Purposive sampling technique was used to select 25 principals of secondary schools that had computers. A list of schools was obtained from the Director of Education Office in Nyanza Province and from other principals. The respondents were 14 male and 11 female Principals drawn from rural, urban and suburban areas.

<table>
<thead>
<tr>
<th>Table 1: Sample Frame</th>
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<tbody>
<tr>
<td>Category of Participants</td>
</tr>
<tr>
<td>Schools</td>
</tr>
<tr>
<td>Principals</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
</tbody>
</table>

Instrument for Data Collection

The main instrument that was used in primary data collection was questionnaire. Secondary data was collected mainly by a selective review of previous relevant literature on government policy for the use of computers in secondary schools.

Data Collection Procedure

The researcher visited the sample schools and administer questionnaire. Where necessary, clarification was made on the items. The respondents were assured of confidentiality in their responses.

Data Analysis and Discussion

Data was analyzed by use of descriptive statistics. This included the use of frequency counts, percentages, graphs, and tables. Responses from open-ended questions were recorded word for word and analyzed. Qualitative analysis involved organizing
and transcribing the data, categorizing and reporting it in emerging themes as shown in the following results. The principals were asked “Does your school have a computer education policy? The responses were summarized and presented in figure 1.

![Figure 1: Schools with computer education policy](image)

Figure 1: Schools with computer education policy

It can be seen from figure one that 19 of 25 (76%) of the Principals had a computer education policy and only 6 of 25 (24%) had no policy on the use of computers. However, none of the Principals who reported having computer policy had a written policy document, so the policies were not well defined, and hence not realistic. Therefore, the Principals whose schools had a policy were asked another open-ended question, “What is the essence of the school policy on computers in education? Their responses were summarized and presented as follows:

- Computer studies is compulsory in form one and two but form three and four learn specific program such as spreadsheet;
- All students are supposed to be computer literate by the time they complete secondary education;
- Computer program to be integrated into curriculum subjects’ area where necessary and to be taken by all teachers.

Although these principals did not have a well written policy, they had some idea of what would be included in the written policy document, so the researcher noted at each point in the policy implementation process, a policy is formulated as individual schools interpret and act on it.

The six principals who reported having no policy were asked to give reasons why they did not have a policy on the use of computers? In response, one Principal from an urban school reported that they did not have a policy in the school, but “in practice computers have been used and confined to teaching and learning computer literacy skills as recommended in computer syllabus.”

Another two principals reported lack of enough computers for students and teachers, and one of Principal complained of lack of competent computer teaches arguing that teachers are computer illiterate and cannot integrate computers into teaching and learning their subjects. Two of them also indicated that “computers have just been purchased and not yet installed and parents are not aware of the need to finance computer education and employ teachers.” However, the overall finding indicated that all Principals who participated in the investigation supported the government policy guiding the implementation and use of computers in their schools.

**Priority given to computer education in study school**

The finding on this question were as shown in figure 2.

![Figure 2: Priority given to Computer education in secondary schools](image)

Figure 2: Priority given to Computer education in secondary schools

Most of the Principals regarded computer education as important and rated the integration very high, but some of them were not very keen on the idea of computer integration in their schools. This could be due to the beliefs of some teachers that the use of computers would replace them from teaching or due to negative attitude towards computer a tool for instruction or lack of understanding of the benefits of the use of computers in teaching and learning since some of them were not computer literate.

Nevertheless, those who responded positively were asked to state the reasons why they gave a high, average and low priority to the integration and use of computers in teaching and learning in their schools. The reasons stated by the Principals were as shown in table.1.
Table 6: Principals’ reasons for giving priority to the use of computers

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Frequencies</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>To make all students computer literate</td>
<td>10</td>
<td>40%</td>
</tr>
<tr>
<td>To improve quality of teaching and learning</td>
<td>5</td>
<td>20%</td>
</tr>
<tr>
<td>To provide computers for teachers and students</td>
<td>4</td>
<td>16%</td>
</tr>
<tr>
<td>No response</td>
<td>6</td>
<td>24%</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>100%</td>
</tr>
</tbody>
</table>

Some of the findings in table one are similar with the research findings of Dexter et al (1998) and Ertmer et al 1999) indicating that the use of computers helps to improve the quality of learning. In addition the Principal who had no priority for computer-integrated education provided the following reasons as shown in table 2.

Table 7: Principals reasons for not having a policy for Computer Education

<table>
<thead>
<tr>
<th>Responses</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of finances to start computer education</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>Teachers are computer illiterate</td>
<td>2</td>
<td>33</td>
</tr>
<tr>
<td>Computers are few</td>
<td>1</td>
<td>17</td>
</tr>
</tbody>
</table>

The above findings indicate that 50% of Principals who had no computers policy gave lack of finance as one reason for not having a policy. But looking closely at table 1 and 2 it can be argued that most of the Principals had a good reason for the need to have a computer policy. This means that the majority of the Principals who participated in the investigation had a vision of to need for a policy to guide the implementation of computer education in their schools, although some of them had various problems as indicated in table 2.

The implementation of school policy for use of computers in teaching and learning

As can be seen from the list in table 3, most of the Principles had taken different steps to implement the school computer policy. Four 12% of them in particular had put the matter before the parents to organize funds raising for purchasing computers equipment and build a room/laboratory for use of computers. There were also 20% of the Principals who had not taken any step to introduce computers in teaching and learning.

The Principals were asked another closed question to state if teachers were implementing the policy for computer education. The responses are shown in figure 3.

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Figure 3: Principals responses on teachers’ implementing computer policy

The majority of the Principals (80%) reported that teachers in their schools were implementing the computer policy as stated by the Ministry of Education and only 20% were not implementing the policy.
Although the schools did not have a written policy document, the Principals who reported having a computer policy were clear about what policy requirement were all about and decided to implement the government policy statement on computers education. In Kenya, education is highly centralized and the Principals of schools are the Ministry of Education administrators at school level, and the government policy automatically becomes the school policy. The policy intentions are accepted and implementation are a matter of the technical ability and will of the implementing school, together with availability of physical and other teaching and learning resources. There can be no deviation or resistance to the educational policy messages.

Nevertheless, Principals who responded “yes” were asked another closed question to rate how effectively teachers were implementing the school computer policy. The responses are shown in figure 4.

![Figure 9: Rating of effective implementation of computer policy by the Principals](image)

Most of the Principals rated the implementation of computer policy as effective while some of them rated the implementation very effective, but a few of the Principals reported that teachers were not implementing the policy while some of them indicated that due to lack of computer teachers, the policy could not be implemented effectively.

### Availability of guideline for the implementation of computer education policy

The last question in this section for the Principals sought information on the guidelines for the teachers to implement computer policy in the classroom. The findings were as shown in table 4.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Frequency</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers use computer syllabus for reference</td>
<td>20</td>
<td>80%</td>
</tr>
<tr>
<td>There is timetable for computer lessons</td>
<td>16</td>
<td>64%</td>
</tr>
<tr>
<td>They use computer textbooks for reference</td>
<td>4</td>
<td>16%</td>
</tr>
<tr>
<td>No response</td>
<td>5</td>
<td>20%</td>
</tr>
</tbody>
</table>

The findings from the Principals regarding availability of guideline/materials for using computers, and in particular the computer syllabus concurred with response from curriculum specialist at the Kenya Institute of education since they are the ones who designs and produced the computer syllabus.

### 4. CONCLUSION

The findings of this study revealed that the government has an important role to play in any new curriculum innovation. In so doing, the Kenya Government developed a computer policy for the use of computers in public secondary schools, and the Ministry of Education acted on the policy by making sure that public secondary schools implemented the computer policy. Consequently, this study established that the current government policy towards the promotion of computer education was fully effective. The majority of the Principals of secondary schools that participated in the study had formulated policies for the use of computers.

The Kenya government must be commended for taking the right steps by introducing ICT educational policy in Kenyan schools and colleges in a bid to spur social and economic development. However, more needs to be done regarding funding so as to increase the accessibility of ICT to all secondary schools.

### REFERENCES


