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Assessment of Economic Stimulus Programme in Ict Integration in Selected Public Secondary Schools in Kenya

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ABSTRACT
Background*: The Economic Stimulus Pragramme (ESP) is an intervention that aimed at mitigating challenges encountered in the Kenyan education through increased enrolment after the introduction of free primary Education and Free Day Secondary education. Increased, enrolment against the available teachers, digital gap between the Kenyan economy and the labour market requirements. Through the supply of ICT among other interventions, it was envisaged that, this intervention would increase access to the leaners in unserved regions, enhance capacity of students and teacher by provision of ICT skills. Since the intervention was initiated in 2009 in 290 constituencies in Kenya information on whether the project has been evaluated is missing. Impact of COVID on learning system necessitates a relook of interventions to establish what impact they have in education. ICT infrastructure support being one of the interventions under ESP has been and to establish if it has had any relationship with the ICT integration in schools.*
Materials and methods:*A multi-stage proportionate samplingselected 36 Principals out of a population 1,050,108 teachers out of 3,150 teachers countrywide and 8 officers out of 80 derived from staff at the Ministry of education headquarters. Principal interview, Teachers questionnaire and Document analysis tools were used. Responses from the three groups were analyzed to determine the effects of Infrastructure supply on ICT integration.*
Results:*.We established that infrastructure was highly inadequate in all the institutions. We also established that the relationship between ICT infrastructure support and ICT integration is significantwitha coefficient of (r=0.388, p-value=0.0001).*
Conclusion:*We concluded that despite the infrastructure support through ESP schools still lacked ICT equipment that would significantly impact on ICT integration in schools.*
Keywords:*Economic Stimulus Programme, Information Computer Technology, Infrastructure Support and ICT Integration.*

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I. INTRODUCTION

Emergencies in education, innovations prompt revolutions and evolutions of education systems.Millennium Development Goals that ended in 2015 had several objectives among them achievement of Universal Education. To led to a rethink of education globally and in develop especially in the developing world.Sustainable Development Goals (2015 to 2030).The realities of COVID-19 and the impact on education, necessitated a re-evaluation on the preparedness of Educational Institutions to handle emergencies. Programmes that allow continuation of learning in absence of face to face interaction and still reach a bigger audience will most times rely on computers or mobile technologies, such as schools on wheels, outreach programmesand E-enabled learning. The impact of COVID-19 has had negative impact on learning across the globe and especially

third world countries, albeit many mitigation initiative put in place to cushion institutions against such emergencies. Such interventions in Kenya have been in the line of ICT support and Polices.United Nations Educational Scientific and Cultural Organization (UNESCO ,2018) guided that for ICT to mitigate challenges a right mix of policies, technologies and capacities should be in place to guide its Integration education.

Introduction of computers in classrooms was based on the realization that ICT was a potential powerful tool for extending educational opportunities, both formal and non-formal, to previously underserved constituencies, excluded from education due to cultural or social reasons such as ethnic minorities, girls and women, persons with disabilities, and the elderly, as well as all others who for reasons of cost or because of time are excluded, (Tinio, 2002); (UNESCO., 2013).

In Kenya ICT reforms aimed at helping achieve goals of educational programmes by enhancing basic literacy and technological literacy among learners. ICT was considered to have considerable potential to support implementation of Free Primary Education and to address challenges that were emerging such as overcrowded classrooms, high Pupil Teacher Ratios particularly in densely populated and semi-arid areas, shortage of teachers in certain subjects or geographical areas, and relatively high cost of learning and teaching materials,(RPK,2005). Every school that has ICT equipment, if it embraces its use, both as a medium and mode of instruction it will offer new opportunities for fresh approaches and innovative strategies to address issues of quality and relevance (Piper, 2018). To capitalize on the nexuses between ICT and Learning outcomes, several programmes were rolled out in Kenya, Kenya Education Network and New Education Partnership for Development (NEPAD) e-schools Programme, ICT Equipment For Schools, School Broadcasting, Development of Learning Content, ICT Equipment For Schools, Kenya ICT Trust Fund, KIE and Kenya Network Initiative For Computers in Education Programme and Economic Stimulus Programme, (MoE, 2014). These initiatives encountered challenges among them; low internet connectivity, electricity and teacher capacity. Such challenges included, inadequate equipment, internet and teachers capacity. Economic Stimulus Programme was an intervention that addressed these challenges through supply of equipment, digital content, ICT and capacity building initiatives. Infrastructural support measures in the ESP programme included provision of both computer software and hardware. Tarus, Gichoya and Muumbo (2015) studied factors affecting e-learning in the Universities. The study revealed that infrastructure played a big role in ICT penetration. Ayere (2009) however, cautioned that the process of equipping schools should not begin and end with putting computers in schools but accompanied with corresponding changes in the approach of teacher training, curriculum development and administration.This programme has not been reviewed to establish if it has had any impact on ICT integration in the targeted institutions. The study focused only on infrastructure support as an intervention under ESP. Knowledge about success or failure of the programme in the targeted institutions ought to be generated. The relationship between ICT integration and Infrastructure support was assessed with a view to generating data that informs the process. Does supply of ICT translate to successful use or other factors determine their use? An inquiry in levels of support in infrastructure supply will shed light on whether the intervention has any impact on ICT integration. This evaluation may inform on how future interventions are carried out.

II. METHODS

Study design

The study adopted a mixed descriptive and correlational designs in data collection and analysis. Descriptive survey design was appropriate for this study because the study involved the collection of quantitative and qualitative data from a number of respondents through interviews and administering questionnaires to a sample of individuals. It involved systematic acquisition and assessment of information on the variable to provide feedback using both qualitative and quantitative methods. Research variables or respondents were not manipulated in an attempt to evaluate the impact of Infrastructure Support on ICT integration in schools. Data collected provided numeric and verbal descriptions of the study variable. Correlation design was employed to determine the kind of relationship that exists between the variables of the study.

Study location

The study was conducted in Kenya targeting the whole country that lies between ($04^0$42'S and $37^0$9062' N and $05^0$35' E and $41^0$00' E) with an area of 582,650 Km^2.

Study duration

The study was conducted in s pan of 6 month between December 2021 and May 2022

Sample size calculation

Disproportionate sampling of 35%, 30% and 20% were then used to select from each of the clusters of the counties; Rural, Peri- Urban and Urban respectively through the simple sampling method. This yielded 17 Counties; 14 Rural, 2 Peri-Urban and 1 Urban respectively.

Sampling method

Multi stage disproportionate sampling of 35%, 30% and 20% were then used to select from each of the clusters of the counties; Rural, Peri- Urban and Urban respectively through the simple sampling method. This yielded 17 Counties; 14 Rural, 2 Peri-Urban and 1 Urban respectively. Beneficiary schools were categorized into the three identified categories yielding a total of 351 schools, yielding a population of 1,531, distributed as, 351 principals and 783 teachers and 80 teachers from the Ministry of Education.In every school, selected the Principal was targeted leading to a sample of 36 Principals. In the schools sampled teachers were categorized into 3 subject clusters; Sciences, Arts and Languages. One teacher was randomly selected from the three clusters. A total of 108 teachers were selected. For officers, purposive sampling was used and 8 officers selected

Inclusion criteria

The participants were included in the study based on the following;

i. Schools that had benefited under the economic stimulus programme.
ii. Teachers teaching either a science,Art or Language course
iii. Principals of those institutions
iv. Officers who incharge of the programme but working at the headquarters

Exclusion

Students were excluded to avoid biases since their level of exposure to ICT is varied based on the background**.**

Methodology

After written informed consent was obtained from the relevant research organizations, a well-designed questionnaire, structured interview schedules and document analysis guides were used to collect data from the teacher, principal and education officers. The questionnaire included items on thesubject taught, experience class enrolment. Then items on ICT infrastructure support eliciting responses on availability of equipment, maintenance and usability.

Data collection was done concurrently. Questionnaires were administered to 108 teachers while 36 Principals and 8 officers were interviewed. Interviews and document analysis were of help in data triangulation and resolving unclear information on the area of research that was not to be gleaned from the questionnaire schedules, thus filling in the gaps and strengthening the information in the study. Interviews were recorded verbatim. Additional notes taken during interviews were attached to the transcribed notes from the interviews. Secondary data was also collected from other data sources, such as reference materials, Purchase documents and inventories and external sources such as publication, newspapers and libraries.

Statistical analysis

Data collected from the study were analyzed using Statistical Package for Social Sciences (SPSS) version 23. Descriptive statistics such as frequency counts and averages were used to describe, summarize and deduce meaning. On ICT infrastructure support, levels of adequacy with means.On ICT infrastructure support, levels of adequacy with means of between $1 < 2$ was interpreted as very adequate, $2< 3$ as adequate, $3 < 4$ as moderately adequate and $4 <5$ as very inadequate. Insufficiency of ICT equipment was interpreted through themean as : $1 < 2$ very high, $2 < 3$ high, $3 < 4$ medium and $4 <5$ low.The level $P < 0.05$ was considered as the cut off value or significance.

III. Results

To establish adequacy of ICT infrastructure support and ICT integration in the selected public secondary schools under the ESP in Kenya Table 1 table indicates means across items in schools;

Table 1 Means of the adequacy of ICT equipment in schools

ICT Infrastructure support	Mean	Std. Deviation
The equipment in the Computer labs	4.30	.92
Projector machines in the school	4.53	.72
The Printers in use for both teaching and learning and for administration purposes	4.65	.65
The CD ROMS with relevant information for teaching and learning	4.35	.73
The laptops are available for teachers, students and administration	4.39	.66

Findings show ICT equipment with mean scores of ranging from 4.30 to 4.65 interpreted arevery inadequate. We also sought establish the relationship between ICT integration and infrastructure support. The results are presented in table 2

Table 2Sufficiency of ICT Infrastructure in schools

ICT infrastructure and support	Mean	Std. Deviation
Insufficient number of computers	2.81	1.137
Insufficient number of internet connected computers	2.65	1.080
Insufficient Internet bandwidth or speed	2.66	1.292
Insufficient number of interactive whiteboards	2.75	1.298
Insufficient number of laptops/notebooks	2.55	1.272
School computers out of date and/or needing repair	2.94	1.353

We established that insufficient number of ICT infrastructure affecting ICT Integration in a high manner were: computers (mean 2.81, SD=1.137),internet connected computers (mean=2.65, SD=1.08); Internet bandwidth or In line with these findings regarding infrastructure support, an interview with a principal who was a key informant recorded that;

"…….*due to the increased number of students, the number of students taking computer lessons has increased several folds. Also, the ICT program is gradually expanded to classroom setup to increase the use of ICT in learning. This means that the ICT infrastructure support should be increased given that what is available remains inadequate and the school's effort to improve provision of computers and internet to teachers and students is also limited to available resources….*" (Key informant interview, Principal May 2022).

(mean=2.66, SD=1.292); Interactive whiteboards (Mean=2.75, SD=1.298);laptops/notebooks (mean=2.55, SD=1.272) and school computers out of date and/or needing repair (Mean=2.94, SD=1.358).

We established the ratio of ICT to users. As presented in figure 4.

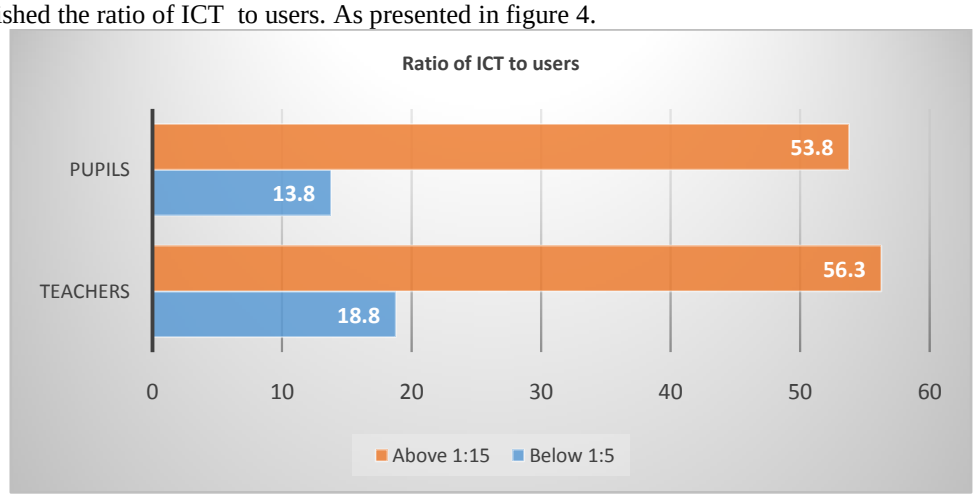

Table 3 ICT sharing ratio

The study established that in most of the schools (56.3%) had sahring ratio of ICT to teachers was more than 1:15. 18.8% of the schools had below 1:5 ratio of ICT to teachers. Regarding the ratio of ICT to learners, in majority (53.8%) of the schools had more than 1:15 ICT to learners. Only 26.3% of the schools had an ICT ratio to pupils of 1:10. Other findings indicated that use of smart was prohibited in schools.These findings that the ratio of pupils to ICT is high is consistent with an interview with a key informant's where the study established that;

"……when looking at the level of access to ICT in our school, the ratio of computers to students remains wanting given that one computer is meant to serve more than 20 students. However the schools have tried to acquire computers using internal resources and buying internet bandwith but our resources are limited..." (Key informant interview, May 2022)

Relationship between infrastructure support and ICT integration

To establish the relationship between ICT integration and Infrastructure support we undertook acorrelational analysis on ICT Infrastructure and ICT Integration. The results indicated r=.388(p=.001) correlation being significant at the 0.01 level (2-tailed).

IV. Discussion

The study found total agreement from all the respondents on adequacy of infrastructure with a mean of between 4.3 and 4.6, pointing to high levels of inadequacy. ICT equipment was very inadequate ICT equipment: computer laboratories, inadequate projector machines, printers in schools, CD ROMs and laptops. Further, it was established that learning and teaching was adversely affected by; low speed or no internet connections, number of computers available, needing repair or updates. Lack of adequate materials for teaching. Despite the low infrastructure ICT support provided through the ESP programme, most of the schools improved their ICT infrastructure through acquiring new computers and equipment in order to improve ICT integration in schools.Sutter(2019) reported similar assertions that provision of ICT related infrastructure in public owned educational institutions is inadequate and should be improved so as to attain a higher ICT use and integration. Globally, (Ghavifekr, 2019) reported that in countries like Singapore and Sweden, they lead in ICT integration due to the fact that they have digitized and provided a lot of ICT infrastructure in their educational institutions.

The finding that the sharing ratio was high both between teachers and pupils affirmed the findings on sufficiency and inadequacy. The results were consistent across respondents. On the contrary there were also computers needing repair or bad affecting sufficiency. Therefore an element of lack of maintenance is affecting adequacy of the available equipment. This finding affirms Haddad (2007) observation that even if computers were acquired for free as donations, they require a substantial financial investment for maintenance and support.

On the sharing ratio in over 53.6% had sharing ratio of over 1:15 for teachers and 56.3% for learners. The sharing ratio is an important indicator on availability equipment. A student-computer ratio of one-to-one could be very desirable, (Ahmed, 2015).The finding on in availability of equipment is explained by lack of finances as reported by an informant, interestingly the ratio among learners was slightly lower compared to the teacher this was probably because of the inclusion of labs, though labs were also accessible to teachers. The lack of embrace of mobile telephones by all schools may be explained by other factors other than costs, since the gadgets are readily available and fairly cheap for an institution.

V. Conclusion

We concluded that there is a significant relationship between ICT infrastructure support and ICT integration. However, there was inadequate ICT infrastructure in schools;computer laboratories, projector machines, printers, CD ROMs and laptops.We further concluded is that the ESP programme influenced acquisition of ICT infrastructure in the schools given that the schools were investing their ownresources to acquire more.

References

[1]. Ahmed, A. M. (2015). A preliminary study of ict's infrastructure and pedagogical practices for technology integration in Sudanese secondary schools, Qaboos University, Muscat, Oman. https://www.researchgate.net/publication/281931305. Social research methods. Oxford, UK: : Oxford University Press.

[2]. Ghavifekr, S. R. (2019). ICT integration in education: Incorporation for teaching and learning improvement. The Malaysian Online Journal of Educational Technology, 2(2), , 24-45.

[3]. MoE. (2014). Ministry of education internal report. Nairobi: Ministry of education.

[4]. MoE. (2018). MTP II Review 2018 Internal document. Nairobi: Ministry of education.

[5]. M Ayere, M.A. (2009). A comparison of information and communication, technology in NEPAD and non NEPAD schools in Kenya, Maseno University, Kenya.

[6]. Piper, B. J. (2018). Kenya's ICT policy in practice: the effectiveness of tablets and e-readers in improving student outcomes. https://www.semanticscholar.org/paper/FIRE%3A-Forum-for-International-Research-in-Educati. Nairobi.

[7]. Sutter, F. &. (2019). Determinants of successful implementation of digital literacy project in public primary schools in Baringo County, Kenya. Journal of Entrepreneurship and Project Management, 4(1), 96-117.

[8]. Tinio, V. L. (2002). ICT in education. . New York, NY:: United Nations Development Programme–Asia Pacific Development Information Programme.

[9]. UNESCO. (2018). UNESCO Institute for Statistics. l: UNESCO Institute of Statistics: http://www.unesco.org/open-access/terms-use. Montreal: UNESCO.

[10]. UNESCO. (2013). Information and Communication Technology (ICT) In Education in Five Arab States: A comparative analysis of ICT integration and e-readiness in schools in Egypt, Jordan, Oman, Palestine and Qatar. Information paper. Canada:: UNESCO Institute for Statistics.

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