

# A Critical Evaluation of the Textbook Programme in Public Primary Schools and Implications for Laptop Classrooms in Kenya

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## Abstract

Social development gravitates around the quality of learning experiences and skills acquired in the school. The utilization of effective teaching and learning strategies as well as the integration of technology are key drivers of Kenya's Vision 2030 and social transformation. Importantly teaching and learning resources such as textbooks are essential but perhaps insufficient to facilitate learning. This paper reports the findings of an evaluation study of the textbook programme in a selected rural district in Kenya and analyses the implication for laptop classrooms within the Kenyan context.

**Keywords:** Instructional effectiveness; textbook programme; public primary schools; learning achievement; laptop classrooms

## 1. Background

The provision of quality education and training is a fundamental concern of many governments in the world. Kenya is no exception to this because human resource development is central to the attainment of the Millennium Development Goals and Kenya's national goals of education. Research evidence has found that a "minimum educational attainment among a majority of a country's population is a prerequisite for national development" (Johnson, 2007; UNICEF & ROK, 2004; UNESCO, 2005). Prior to the implementation of the Primary Schools' Instructional Materials Programme, the quality of education in primary schools had been observed to indicate a downward trend as evidenced by low mean scores in national examinations and decreased pupil participation (MOE, 2000; KNEC, 1999, 2000, 2003). The trend was attributed to increasing poverty levels, rising cost of teaching materials and the growing number of children orphaned through HIV/AIDs (MOEST, 2001; ROK, 2005).

The Kenya government through (ROK, 2005) advanced the view that in order to enhance the quality of education and learning achievement, "a set of essential inputs should be made to every child, ensure that these are effectively utilised so that learning becomes the central focus of classroom activities" (p.90). The programme aims at achieving equity in education through providing pupils in public primary schools with basic instructional materials such as textbooks and other curriculum support materials.

A study by Bedi, Kimalu, Manda and Nafula (2002) found that "there were concerns over dropout and repetition rates... and a worrying trend in school enrolment". Student mean scores in national examinations particularly in core subjects continue to indicate a downward trend (MOEST, 1986, 2000, 2003). Thus a significant number of pupils may not acquire adequate skills to participate effectively in national development which may thwart the realization of UPE, EFA and Kenya's Vision 2030. The textbook programme has been implemented in Kenyan primary schools to enhance instructional effectiveness but this notwithstanding, pupils lack mastery of reading and comprehension skills as Muindi, (2010) and Uwezo (2010) observed. This elicits several questions: Are textbooks available to learners in public primary schools? How effectively have these textbooks been utilized to facilitate learning? What measures may be put in place to enhance instructional effectiveness in Kenyan public primary schools? What is the implication of the textbook programme for the laptop classrooms in Kenya? This paper reports the findings of a study conducted to establish the extent to which textbooks were used to enhance learning in public primary schools in one rural district in Kenya.

## 2. Purpose of the Evaluation

The purpose of the evaluation was to gather and analyse evaluative data that may be used to make some observations and comments from which stakeholders might learn particularly for the laptop classrooms in the Kenyan context. Moreover, there's need to assess the programme's effectiveness so that lessons learned might

be useful in the implementation of the laptop programme in public primary schools. It was therefore fitting that researcher-driven evaluation be conducted to establish whether the programme was worth investing in and to point out key areas in the programme's operations and management that require strengthening or improvement to make it more successful in realising immediate outcomes and perhaps long term goals.

The evaluation was informed by Daniel Stufflebeam's (2003) assertion that the "most important purpose of evaluation is not to prove but to improve" (p.4). Several other experts in programme evaluation (Cronbach, 1982; Vedung, 1997; Weiss, 1972) concurred with Stufflebeam when they emphasized that the key purpose of evaluation is programme improvement. Royse, Thyer, Padgett and Logan (2006) also affirmed that the purpose of such an evaluation is "to assist in explaining why a program did or did not achieve the desired outcomes" (p.122). The study also serves to generate knowledge on the processes and interactions going on PSIMP's operations and management. These findings will therefore be disseminated to the larger policy community since as pointed out by Weiss (1990) cited in Patton (1996), "generalizations from evaluation can percolate into the stock of knowledge that participants draw on...Decision makers are influenced by ideas and arguments that have their origins in research and evaluation" (p.72). The evaluation of this programme provides the much needed data which may help in understanding its operations and management as well as identifying areas of programme's processes that may be improved (Bennet, 2003; Ogula, 2002) or may be preserved (Patton, 2002) for purposes of enhancing instructional effectiveness.

### 3. Textbook Model

This model rests on the assertion that it is the availability and utilisation of textbooks that promotes learning and retention of information which in turn translates into improved learning achievement and school effectiveness. It is the proper utilisation of textbooks that makes an effective school. Textbooks, according to this model make up the curriculum package and when the learners use them consistently and meaningfully, with appropriate guidance from the teacher they may achieve the intended learning outcomes as well as the improved test scores. The same model holds that providing learners with textbooks increases their participation in school and promotes their upward social mobility.

The quality and appropriateness such as content, format, level of vocabulary, ethnic and gender biasness are some of the key factors that teachers take into consideration when selecting textbooks for the pupils. When the selected textbooks are utilised effectively in the classroom they contribute to the achievement of the programme objectives and long term goals. Research on the availability and utilization of textbooks has greatly influenced the investments of several governments, philanthropic organisations and donor community in education. For instance Heyneman, (1981); Hungi (2006); Lockheed, (1986) among other scholars have found that effective use of textbooks by both teachers and students is one of those school factors that influences the achievement in Mathematics and Reading in primary schools. The teacher provides opportunities to interact with the textbooks through group tasks, class work, reading activities and take-home assignments.

This model was found appropriate to guide the study since textbooks are the basic tools without which the teacher cannot plan for learning effective activities. All classroom processes depend heavily on the availability of the textbook. According to Oakes and Saunders (2004) "students can only learn what they have access to" thus making the textbook a vital resource for teaching and learning. Several studies (Fuller and Clarke, 1994; Jamison, 1981; Lockheed, 1986) have explored the relationship between the availability and use of textbooks and learning achievement. For instance, in Philippines, Lockheed (1986) used a quasi experimental study to find out how the utilisation of textbooks influenced test scores. This study found that pupils of those teachers who used textbooks for teaching often performed well in examinations. When textbooks are not available particularly to young learners, then proper reading skills are hardly acquired. Adams (1990); Burns and Griffin (1998) cited in Palincsar and Duke (2004) argue that learning to read is not a natural process but the pupils must be able to create the appropriate meanings from words. Duke (1998) further found that the "relative scarcity of textbooks ... may help to explain why children have difficulty with reading and writing" (p. 187) which impacts negatively on learning achievement.

Fuller and Heyneman (1989), Freeman and Porter (1989) posit that the availability of textbooks was a significant factor in predicting academic achievement. Teachers utilize them to plan their lessons while students use them as a springboard for knowledge acquisition to propel them into realisation of their individual potentials. Maxwell (1985) cited in Muhammad et al (2007) further points out that textbooks "determine what is taught and how it is taught" since their availability influences the teacher in identifying and selecting learning opportunities as well as homework. Westbury (1989) cited in Oakes and Saunders (2004) posits that "textbooks are in fact, the heart of the school and without which there would be no school" and their availability (or scarcity) is therefore central to an effective school.

Fuller and Heyneman (1989) also found out that there is a positive effect of availability of textbooks with students' learning achievement. The TPR determines the availability of textbooks and when this is low it impacts on learning achievement. A study by Levin and Lockheed (1991) realised that there is a strong correlation

between sufficient textbooks and student achievement. However availability of textbooks does not guarantee learning but it is the utilisation of textbooks that contributes to differential student achievement. Teachers use them to plan for lessons, homework and group tasks.

#### 4. Methodology

The study employed a mixed methods approach in which both qualitative and quantitative data were collected and analysed from the same study. This approach was found favourable since it not only expands the understanding from one data form to the other but also converges, cross-validates and corroborates findings within a single study (Creswell 2002, p. 211). There has also been growing interest in mixed methods of research and evaluation as found in journal articles, projects and evaluation of programmes funded by different organisations of international repute (Ary, Jacobs, Razavieh & Sorensen, 2006; Guba & Lincoln 1985; Patton 1990; Stufflebeam, 2003). Several debates about the “right” method of conducting educational research and evaluation seem to favour the mixed methods approach.

A combination of three designs generated the requisite data to answer the evaluation questions. The case study design was found to be the most appropriate since it allowed the evaluator to observe and collect in-depth information about the actual implementation of PSIMP using one typical rural district as the “case”. Through observing, interviewing and perusing the existing documents, the evaluator was able to understand the context in which the programme was being implemented.

The survey design was found useful in collecting and analysing data from a sample of the large population with a view to firstly make inferences about the entire population by describing and interpreting “what is” and secondly, “identify standards against which existing conditions can be compared or determining the relationships that exist between specific events” (Cohen, Manion & Morrison, 2002, p.169). This design was preferred because it gathers data on a one-shot basis, generates quantitative data which can be processed statistically and also provides descriptive, inferential and explanatory information that the study is concerned about. It is a very powerful design in investigating people’s beliefs and perceptions on the processes taking place and management of Primary Schools Instructional Materials programme.

The *ex post facto* evaluation design provided a means for linking the TPR to pupils’ learning achievement, enrolment and participation before and during the implementation which were particularly important in this study. The implementation of the programme had already taken place making the manipulation of the independent variables impossible hence their effects were studied in retrospect. The evaluator created a comparison group by considering the availability of textbooks, TPR, pupil enrolment, participation, transition and learning achievement at KCPE in public primary schools in Murang’a South district prior the implementation of the programme. This enabled the evaluator to assess the effectiveness of the programme’s implementation, the availability of textbooks and outcomes which could perhaps account for the observed differences (Cohen, Manion & Morrison, 2002).

#### 5. Result and Discussion

Primary schools in Kenya provide basic education to eligible learners. To facilitate the process each school receives per capita grants from governments funding with an aim of providing primary school pupils with at least one textbook for every subject shared among three learners in the lower primary and one subject textbook for every two pupils in the upper primary in addition to the basic package of school stationery (MOE, 2007). ROK (2005) envisaged that every pupil may have access to a textbook in every subject offered in the school curriculum. In order to facilitate selection of appropriate textbooks MOE (2004) produced “The Approved List of Primary School Textbooks and other Instructional Materials” (The Orange Book) which contains the list of textbooks vetted by Kenya Institute of Education. Accordingly teachers were part of the implementing team. Their membership in the School Instructional Materials Selection Committee is presented in the Table 1.

**Table 1: Distribution of Teachers’ Membership in SIMSC by Zone and Gender**

Zone	Males	%	Females	%	Total
A	7	24.2	20	45.5	27
B	5	17.2	11	25.0	16
C	9	31.0	5	11.4	14
D	8	27.6	8	18.1	16
<b>Total</b>	<b>29</b>	<b>100.0</b>	<b>44</b>	<b>100.0</b>	<b>73</b>

As shown in Table 1 seventy-three teachers participating in the study were members of the School Instructional Materials Selection Committee which was responsible for selection, procurement, allocation and ensuring effective utilisation of textbooks in teaching and learning. Each zone was well represented by both male and female teachers to the committees.

Another aspect of the implementation analysed pertained to the number of induction courses teachers in selected district had attended in order to prepare them for the implementation of textbook programme. Beltran, Ghosh

and Kadiyala (1998) affirm that this is an important consideration because training of programme staff affects the implementation process. Teachers were key programme implementers in the district and thus preparing them for the task through workshops was a crucial step in the process. The study found that more male teachers had attended a higher number of induction courses on the implementation of textbook programme compared to females. In one zone more than 60% of teachers comprising SIMSC had not been inducted to prepare them to take an active role in the implementation of the programme.

One member of the School Instructional Materials Selection Committee observed, “The selection of appropriate texts is done by teachers who then make these recommendations to the Committee through the head teachers for formality purposes”. This suggests that there could have been external factors that interfered with the implementation. The study sought to determine the textbook-pupil ratio in the key subject areas. Table 2 summarizes the findings.

**Table 2 English TPRs in Some Selected Classes in the Four Education Zones in the selected study area**

Zone	Level		
	2	5	7
A	1:3	1:4	1:3
B	1:3	1:3	1:3
C	1:4	1:4	1:3
D	1:3	1:3	1:3
<b>Overall</b>	<b>1:3</b>	<b>1:4</b>	<b>1:3</b>

It is evident from Table 2 that no educational zone had attained the expected TPR with respect to English. This could perhaps explain why the many pupils had challenges in reading as observed by Uwezo (2010). Prior to the implementation of PSIMP in the district, the TPR in lower primary was below 1:3 while in upper primary the TPR averaged 1:4 in English (MOEST, 1999; 2004).

In well performing schools most pupils also had a variety of English text books in upper primary while the opposite was observed in lower primary. Pupils in poorly performing schools had a limited variety of English text and Library books. Most of the textbooks in both well performing and poorly performing schools were well maintained and there was some evidence of usage by pupils. Some of the issues arising from these ratios pertained to the rationale used by teachers to assign textbook to pupils as they attended to assignments. There was an improvement in as far as the availability of textbooks were concerned compared to an earlier ratio of 1:5. The study also sought information on how often teachers involved their pupils in cooperative learning through the use of group tasks requiring the use of textbooks in the classroom. The study found that 43.3% of teachers often divided the classes into small groups for learning activities while 46.8% sometimes used this method of teaching. In the lower primary section group tasks were used often but decreased gradually in the upper levels of learning. It is through the use of cooperative learning that pupils helped one another to acquire knowledge, skills and attitudes necessary for individual and national development. This was in line with the responses of the pupils as given in Table 3.

**Table 3 Distribution of Pupils’ Responses on Frequency of undertaking Group Tasks in the Classroom**

Response	Well performing schools		Poorly performing schools	
	Frequency	%	Frequency	%
Very Often	78	29.3	38	16.5
Often	75	28.2	61	26.5
Sometimes	113	42.5	131	57.0
<b>Total</b>	<b>266</b>	<b>100.0</b>	<b>230</b>	<b>100.0</b>

Availability and utilization of textbooks has been found to affect student achievement to a great extent. For instance, Fuller and Clarke (1994) found that availability of textbooks had a positive effect on learning achievement in 73% of the cases included in their study. Similarly, Heynemann, Farrel and Sepulvedo-Stuardo (1978) cited in Oakes and Saunders (2004) found availability of textbooks to be the most consistent single factor for predicting student achievement. It was against this background that the study sought to establish whether availability of textbooks had helped raise the quality of education as indicated by learning achievement at KCPE. Table 4 presents the Mean Standard Scores in the public schools participating in the study.

**Table 4. Average Mean Scores at KCPE from 2001-2009**

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>MSS (mean)</b>	229.33	231.26	225.56	223.55	217.29	233.67	226.84	236.01	234.88

As may be observed from Table 4 the average mean scores were not consistent. For instance, in 2003 the same year that the textbook programme was launched in the district the average mean scores at KCPE was 225.56 in the schools that participated in the study. The following year, the mean scores declined but begun rising in 2006.

This oscillation may not be attributed to the availability of textbooks but perhaps to contextual factors. The average mean scores in the schools that participated in the study changed from 231.27 in 2002 to 234.38 in 2009. This change was notable but did not justify the expenditure that had been incurred during the implementation. The mean scores in individual subjects were observed to remain about constant at 45%. Notably there had been a remarkable change in Mathematics mean scores in the district since 2002. The district posted an average of 50% in KCPE Mathematics. The social studies mean scores at KCPE remained at 47% while science had posted a constant mean of about 48% from 2003 to 2009. In Kiswahili, the situation was similar with the MSS remaining at an average of 47% in all schools included in the sample. This was consistent with statistics from both quality assurance and standards officers and the district Education office. Table 5 presents the average subject mean scores as analysed yearly.

**Table 5 Average MSS at KCPE by subject from 2001-2010**

Year	English	Mathematics	Kiswahili	Science	Social Studies
2001	44.33	45.86	49.08	45.91	44.52
2002	48.55	46.53	47.52	44.10	43.85
2003	44.87	45.24	46.94	43.35	44.95
2004	44.97	44.65	44.16	42.48	43.00
2005	44.42	42.79	45.45	41.20	43.68
2006	44.63	46.48	48.92	45.63	47.41
2007	45.06	45.05	46.40	45.87	45.34
2008	47.15	47.72	47.41	46.49	47.48
2009	48.25	48.01	47.41	46.11	45.00

Analysing Table 5 it is evident that there had been a slight improvement in mean scores with respect to English. The student achievement at KCPE in English moved from an average of 44.33% in 2001 to 48.25% in 2009 in the district. Availability of textbooks may to some extent, be attributed to the slight improvement in student mean scores. The study also established that Mathematics mean scores had improved from an average of 45.86% to 48.01% in 2009. This change is notable but perhaps may not justify the GOKs expenditure on the programme implementation. The trend with regard to Kiswahili was inconsistent.

Prior to the implementation of programme in the study area in 2001, Kiswahili mean scores in the schools participating in the study stood at an average of 49.08% but dropped slightly to 47.41 in 2009. This finding supports an earlier one made in the same study which indicated that text books were inadequate in majority of the public schools hence the slight decline in student achievement scores in Kiswahili. Science textbooks were inadequate which perhaps explained the inconsistency in pupil achievement mean scores. This finding may also be supported by the fact that many public primary schools in the study area lacked Science kits and teachers seldom involved the pupils in “hands-on” activities through improvised resources. This is consistent with Corno (2000) who found that children performed well in Science when they gain knowledge from concrete experiences progressively to abstract thinking. In the same vein the TPR in Social Studies was the highest perhaps indicating that the scarcity of textbooks could have contributed to the trend observed in the achievement scores.

## 6. Tests of hypotheses

The characteristics of the target population were inferred from those of the sample by testing the following null hypotheses.

1. *There is no significant difference in English mean scores at KCPE in schools with adequate text books and those without.*

Analysis of variance was used to test the hypothesis that: there is no significant difference in English mean scores at KCPE in schools with adequate text books and those without.

Table 6 presents the results obtained from this t-test.

**Table 6: Comparing KCPE Mean Scores Between Schools with Adequate and Inadequate Textbooks.**

### ANOVA Summary Table

Dependent Variable: Performance in English

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	.333(a)	1	.333	.143	.742
Intercept	16.333	1	16.333	7.000	.118
TPRENG	.333	1	.333	.143	.742
Error	4.667	2	2.333		
Total	30.000	4			
Corrected Total	5.000	3			

*R Squared = .067 (Adjusted R Squared = -.400)*

From Table 6 the F-stat was 0.143 with a p-value of 0.742 and hence the evaluation found that there was no significant difference in mean scores among those schools with adequate and inadequate English textbooks. The null hypothesis was therefore not rejected. An interesting piece of information was obtained from the R squared value (.067). The adequacy of text books explained about 7% of the variation in KCPE mean scores in English. Other contextual factors such as how textbooks were utilised for teaching and learning, completion of homework, attitude, perceptions of teachers and pupils among others could perhaps explain the variation in KCPE test scores.

2. *There is no significant relationship between mean TPR (English) and mean learning achievement in English among the education zones.*

Pearson correlation was used to test the hypothesis that: there is no significant relationship between mean Textbook-to-pupil Ratio and mean learning achievement at KCPE when classified by Education zones. Table 7 presents the results of this test.

**Table 7: Pearson Correlations Between Mean TPR in English and Mean Learning Achievement in English (Calculated Zonewise).**

		TPR English	Performance in English
TPR English	Pearson Correlation	1	.258
	Sig. (2-tailed)	.	.742
	N	4	4
performance in English	Pearson Correlation	.258	1
	Sig. (2-tailed)	.742	.
	N	4	9

It is evident from Table 7 that there was a relationship between TPR (English) and KCPE learning achievement in English ( $r = .258$ ). However, this relationship was not significant as indicated by the p-value of 0.742. The study therefore failed to reject the null hypothesis. Other contextual factors other than availability of textbooks may also affect learning achievement in English in public primary schools.

3. *There is no significant relationship between mean textbook-to-pupil ratio and mean pupil enrollment in public primary schools in Murang'a South District.*

The Pearson product moment Correlation was used to test the hypothesis that: there is no significant relationship between mean textbook-to-pupil ratio and mean pupil enrollment in public primary schools. Table 8 presents the results.

**Table 8 Pearson Correlations for relationship between mean TPR and mean pupil enrollment**

		TPR	Mean pupil enrolment
Pearson Correlation	Pupil/text book ratio	1.000	-.96
	mean pupil enrolment	-.96	1.000

Further analysis was conducted to establish the extent to which the mean textbook-to-pupil ratio explained the variation in pupil enrolment. Table 9 presents the results.

**Table 9 Model Summary for relationship between pupil/books ratio and mean pupil enrollment**

Change Statistics					
	R Square Change	F Change	df1	df2	Sig. F Change
	.915	43.312	1	4	.003

*Predictors :Mean pupil enrolment*

As shown by Table 9 there was high negative correlation (at -.96) between mean pupil/books ratio and mean pupil enrollment in primary schools that participated in the study. This was further confirmed by R squared value of .92. This value indicates that textbook-to-pupil ratio explained about 92% of the pattern observed in the enrollment trends since the inception of the programme in the district.

**Table 10: ANOVA for Relationship Between Mean Pupil/books ratio and Mean Pupil Enrollment (Calculated Zonewise)**

ANOVA Summary Table					
ANOVA	Sum Squares	ofDf	Mean Square	F	Sig.
	16.020	1	16.020	43.312	.003
	1.480	4	.370		
<b>Total</b>	17.500	5			

*Predictor: mean text book-to-pupil ratio; Dependent Variable: Mean pupil enrollment*

Since the obtained level of significance (.003) is smaller than .05, the null hypothesis was rejected and this implied that there was a significant relationship between pupil/books ratio and pupil mean enrolment in public primary schools. This shows that TPR significantly affects the enrollment in public primary schools. Therefore it was highly likely that many parents had withdrawn their children from public primary schools perhaps due to inadequacy of textbooks.

## 7. Implications for the Laptop Classrooms in Kenya

The world is not only a global village but also a digital society. Kenya has not been left behind in her endeavour to use education to prepare learners to navigate the dynamic digital platform. To this end policies have been formulated whose ultimate goal to provide school-going children joining class one every year with solar powered laptops. The implication is that this heavy budgetary investment in education ought to have high rates of return for social transformation. From the observations made in the textbook programme, there is a need to induct teachers in the utilization of laptops in the instructional process as well as ensuring that the procurement, indexing and issuance of the laptops to the pupils follow a transparent and accountable process. Effective use of the laptops for teaching and learning is a critical issue in the school. For instance when shall the ratio of 1:1 be actualized? How shall the teachers who have had no prior training in computer skills from the teacher training curriculum cope with this new technology bearing in mind that most of those in the rural areas are advanced in age and lack a hands-on experience in utilization of computers for their own personal use? What about the disposal of these gadgets and their effects on pollution now that so many of these will be introduced into the educational arena?

## 8. Conclusion

From the foregoing discussion it may be concluded that the textbooks play a critical role in teaching and learning. Their availability and affective utilization may facilitate learning. Teachers need to be sensitised in embracing global trends in relation to textbook utilization to enhance learning particularly in engaging learners with hands-on activities. The introduction of laptop classrooms in Kenya is a new concept and thus aligning national goals of education with global trends must now be a priority. Stakeholders must work together to make laptop classrooms a success story. Attitude change may go a long way in making the programme make significant contributions in the achievement of Kenya's Vision 2030.

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