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## EFFECTS OF CONTAINMENT MEASURES OF COVID-19 ON PARTICIPATION OF STUDENTS IN PUBLIC SECONDARY SCHOOLS IN MACHAKOS COUNTY, KENYA

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### **Abstract**

Coronavirus (COVID-19) outbreak affected educational systems worldwide, leading to widespread and lengthy closures of educational institutions. The containment measures of COVID-19 put in place interrupted learning, nutrition, and equal access to digital learning portals and led to rising cases of child labour, drug and substance abuse, and teenage pregnancies. This study aimed to establish the effect of containment measures for COVID-19 on participation of students in secondary schools in Machakos County, Kenya. It was guided by the Classical Liberal Theory of Equal Opportunities and the Production Function Theory. Descriptive and correlational research designs were adopted. The population for the study was 93,204 respondents comprising 296 principals, 5,920 teachers, 86,979 students, One County Quality and Standards officer (CQASO), and Eight Sub-County quality and Standards Officers (SCQASO). Proportionate and simple random sampling were used to obtain 382 respondents, including 195 students and 89 teachers. Also sampled purposively were 89 principals, one CQASO, and eight SCQASOs. Study instruments included questionnaires for principals, teachers, and students, while an interview schedule was designed for CQASO and SCQASO. The tools were subjected to reliability and validity tests before use. Face, content, and construct validity were ascertained before administering the instrument. Reliability was computed using the Cronbach Alpha coefficient on the data obtained from a pilot study in Kitui County, an average reliability coefficient of 0.816 obtained ascertained an acceptable reliability threshold. Qualitative data were analyzed thematically. Hypotheses were tested using simple linear regression statistics at  $\alpha = 0.05$  significance level. The study's findings established containment measures for COVID-19 affected participation in public secondary schools in Machakos County. The study recommends the establishment of computer studies as a core

*subject to equip learners with technological know-how for use in case of disrupted learning leading to the abrupt closure of schools.*

**Key Words:** *Containment, Measures, COVID-19, Participation, Students and Secondary schools*

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## **Introduction**

Globally, locally, and personally, education is essential and beneficial to individuals and society, claim Thanassoulis, Portela, and Johnes (2017). Ngesa, Sang, and Kiveu (2017) contend that education is essential for promoting the humanities, communities, countries, and people's economic, social, cultural, and political development. Efficiency in education refers to the relationship between a system's inputs and outputs. A system of education is said to be efficient if the most output can be produced from a given input or if a specific product can be produced with the fewest possible inputs. (Hanushek, 1986). This means that after obtaining the essential knowledge, skills, and attitudes, all students enrolling in form one at any public secondary school must continue their studies and graduate successfully within the designated period. However, the control attempts for COVID-19 resulted in lengthy school closures that more seriously impacted teaching and learning, significantly affecting education (Donnelly et al., 2020).

The World Bank Group (2020) hinted that the level of private and social investment in education due to the outbreak of the COVID-19 pandemic is likely to have an impact on the internal efficiency of education when pointing out that the anticipated impact of the COVID-19 pandemic on education budgets has some similarities with previous crises. Both in absolute terms and as a share of the total education budget, public education investment in Sierra Leone fell precipitously during the Ebola pandemic (World Bank Group, 2020). The World Bank Group (2020) hinted that the level of private and social investment in education due to the outbreak of the COVID-19 pandemic is likely to have an impact on the internal efficiency of education when pointing out that the anticipated impact of the COVID-19 pandemic on education budgets has some similarities with previous crises. Both in absolute terms and as a share of the total education budget, public education investment in Sierra Leone fell precipitously during the Ebola pandemic (World Bank Group, 2020). The objective of the current study was to ascertain how containment strategies for COVID-19 affected student participation and retention in public secondary schools in Machakos County, Kenya.

## **Statement of the Problem**

Interruptions to schooling due to the outbreak of disease pandemics, natural calamities, and human conflicts exacerbate internal inefficiency in public secondary schools. The containment measures of COVID-19 executed by governments in most countries to halt the spread of the coronavirus affected educational systems worldwide. The Kenyan government adopted measures such as extended school closures, which augmented child labour, drug and alcohol addiction, adolescent pregnancies, defilement, and early marriages. This made repeating classes and dropping out of public secondary schools, two symptoms of internal inefficiency, worse. Schools' abrupt and extended closure also saw learning shift from school to homeschooling, demanding the adoption of online and digital learning platforms. Containment procedures also restricted people's movements and required maintaining social distance to stop the virus from spreading. The Ministry of Education in Kenya revised the school calendar from October 2020 to December 2023 to compensate for the lost time. Given the limited amount of time available, such measures could strain students, teachers, educational administrators, and managers, which could impact internal efficiency. This relates to how secondary students in public schools participate in extracurricular activities, including sports, games, theater, and music, as well as how school administrators manage the time allotted for

teaching, covering the curriculum effectively, and conducting proper assessments. In Kenya's Machakos County, this study evaluated the effect of containment measures for COVID-19 on the student's participation in public secondary schools.

### **Theoretical Framework**

The basis of this study will be the Classical Liberal Theory of Equal Opportunities espoused by Sherman and Wood (1992) and the Production Function Theory of economics as described by Psachalopoulos and Woodhall (1985).

#### **Classical Liberal Theory of Equal Opportunities**

Sherman and Wood (1992) contend that all students ought to have equal educational possibilities, which is in line with the classical liberal notion of equal opportunity. According to the common liberal perspective of equal opportunity, every learner is born with some level of ability that is essentially innate and cannot be considerably changed. In order to enable talented children from lower socioeconomic backgrounds attain their full potential, education systems and organizations should be set up to remove any barriers that stand in their way. This is because these students' innate talents help them advance in society.

#### **Production Function Theory**

This study also adopted the Production Function Theory, a crucial tool for economic analysis in the neoclassical paradigm. The economic production theory, as outlined by Psachalopoulos and Woodhall (1985), served as the foundation for this investigation. A systems theory called production function theory portrays a school's behavior as an open system that chooses which resources and quantities to use to generate specific quantities. The inputs, processes, and outputs created when the inputs are molded during processing comprise the production model's three sections. The process of transforming inputs (students) into desired outputs (graduates) is influenced by internal and external elements present within the school throughout processing. Theoretically, if all variables remained constant, the firm's (school's) output (graduates) would be 100%; all inputs (students) would be transformed into desired outputs.

### **METHODOLOGY**

The research was conducted in Machakos County. The study employed descriptive and correlational research methods to assess the effect of COVID-19 containment measures on the internal efficiency of secondary education. The research was confined to public secondary schools. The study targeted 296 public secondary schools. Eighty-nine public secondary schools in Machakos County, Kenya, or 30% of the 296 public secondary schools, were chosen for this study. Out of the 89 schools chosen, there were 45-day mixed schools, 21 boarding mixed schools, 8 boys boarding schools, and 15 girls boarding schools. As a result, a sample of 382 respondents was obtained for this study. The sample comprised hundred and ninety-five (195) students, 89 teachers, and 89 principals. In addition, there was one (1) county quality and standards officer and eight (8) sub-county quality and standards officers. Data and information were collected by use of questionnaires and an interview schedules. Piloting of the instruments was carried out in the neighbouring Kitui County. Face validity was ascertained by the expert scrutiny and review of the choice of the research instruments. Descriptive statistics were used to analyze the quantitative data obtained, using frequency counts, percentages and weighted averages. For inferential analysis, linear and multiple regression and Pearson's correlation analysis were calculated at a significance level of 0.05 to determine if there was any relationship between the independent and the dependent variables.

## RESULTS AND DISCUSSION

### Distribution of Respondents by Category of school

In the chosen public secondary schools in Machakos County, Kenya, the study aimed to determine the distribution of respondents by type of institution.

**Table 1: Distribution of the respondents by category of school**

Category of school	Principals		Teachers		Students	
	F	%	F	%	F	%
Day Mixed	48	54.54	47	55.95	115	58.97
Girls Boarding	14	15.91	13	15.48	28	14.36
Mixed day/boarding	12	13.64	11	13.10	24	12.31
Boys boarding	8	9.09	8	9.52	16	8.21
Mixed boarding school	6	6.82	5	5.95	12	6.15
Total	88	100.00	84	100.00	195	100.00

The majority (54.54%) of the principals, as shown in Table 1, were from day mixed schools, while 15.91% were from girls' boarding schools. Principals sampled from mixed day/boarding schools accounted for 13.64%. On the other hand, those obtained from mixed boarding secondary schools and boys boarding accounted for 9.09% and 6.82%, respectively. Most teachers (55.95%) sampled were drawn from day mixed secondary schools. Teachers participating in girls' boarding and mixed day/ boarding secondary schools were 15.48% and 13.10%, respectively. Only 9.52% of the teachers were from boys boarding schools, and another 5.95% were from mixed boarding secondary schools.

### Age Structure of the Respondents

Age demographics are significant because they relate to individual experiences. Age affects attitudes and perceptions, which can vary significantly amongst cohorts of different ages. The age breakdown of the principals and teachers is displayed in Table 2.

**Table 2: Age Structure of the Respondents**

	Principals		Teachers	
	F	%	F	%
25-29 years	0	0	19	22.60
30-34 years	0	0	22	26.20
35-39 years	0	0	19	22.60
40-44 years	7	8.00	13	15.50
45-49 years	9	10.20	3	3.60
50-54 years	56	63.60	8	9.50
55-60 years	16	18.20	0	0.00
Total	88	100.00	84	100.00

As indicated on Table 2 majority (63.60%) of the principals were in the 50-54 years' age group. A significant proportion (18.20%) were in the 55-60 years' age bracket. Principals in the 45-49 years' age bracket accounted for 10.20% while only 8.00% indicated were within the 40-44 years' age bracket. There was no principal below the age of 40 years. Most (26.20%) teachers were in the 30-34 years' age bracket while 22.60% were between 25-29 years' age bracket. A similarly 22.60% of the teachers were in the 25-29 years' age group. Teachers in the 40-44 years'

age group accounted for 15.50% of the respondents. Teachers in the 45-49 years' and 50-54 years' age groups accounted for 3.60% and 9.50% respectively.

### Highest Academic Qualification

The study established the highest academic qualification of principals and teachers.

**Table 3: Principals and teachers Academic Qualification**

Education Level	Principals		Teachers	
	F	%	F	%
PhD	0	0.00	0	0.00
Master Degree	47	53.40	15	17.90
Bachelor Degree	41	46.60	69	82.10
Diploma	0	0.00	0	0.00
Total	88	100.00	84	100.00

The majority (53.40%) of the principals held a master's degree, as shown by the data in Table 3. A bachelor's degree was held by 46.60 % of respondents. The principals lacked doctoral degrees. 82.10 percent of the teachers had bachelor's degrees, while 17.90 percent had master's degrees. None of the teachers had a diploma or Ph.D., just like the principals. Many principals have enrolled in additional coursework as a result of the need for school administrators to prepare themselves with more knowledge and academic papers when they attend interviews for promotions for the following job group performed by the Teachers Service Commission.

### Length of Service

This study set out to determine the length of service of the principals and teachers to discover differences between reports on the Effect of containment measures of COVID-19 on the internal efficiency of public secondary schools in Machakos County, Kenya.

**Table 4: Length of service of principals and teachers**

	Principals		Teachers	
	Frequency	Percentage	Frequency	Percentage
Between 0- 4 years	9	10.2	30	35.7
Between 5 -9 years	33	37.5	19	22.6
Between 10- 14 years	7	8.0	14	16.7
Between 15 - 19 years	20	22.7	6	7.1
Over 20 years	18	21.6	15	17.9
Total	88	100.00	84	100.00

A majority (37.5%) of the principals held their positions for five to ten years, according to the data in Table 4. Principals with 17 and 20 years of experience comprised 22.7% of the total, while those with more than 21 years of experience comprised 21.6%. Only 10.2% of the group had been principals for 0 to 4 years. Additionally, 8.0% of respondents had been principals for 10 to 14 years. The length of time teachers had been employed is also disclosed in Table 10. Most (35.7%) of teachers had been in the profession for 0 to 4 years. Another 22.6% had served for five to ten years, while 17.9% had served longer than twenty-one years. Teachers who served for 10-14 years accounted for 16.7%. Only 7.1% of the teachers indicated they had served for 15-19 years.

### Residence during prolonged closure due to COVID-19

During the extended shutdown of schools brought on by containment efforts of COVID-19, the learners were asked for information about where they were living.

**Table 5: Residence of the Student During extended shutdown of schools due to containment measures of COVID-19**

Residence	f	%
Urban	45	23.8
Rural	144	76.2
Total	189	100.0

According to data in Table 5, most students (76.2%) resided in rural areas. Comparatively, few (23.8%) choose to spend their time in cities during the prolonged school closure brought on by the containment measures for COVID-19. This can be attributed to influx of people from the urban areas to the rural areas to either escape the rapidly spreading corona virus in the urban areas and the consequences of the restrictions of movement of persons as a containment measure.

### Principals' views on effect of containment Measures of COVID-19 on Participation

The researcher aimed to ascertain whether or not the principals agreed with the claims on the impact of Containment measures of COVID-19 on students' involvement in public secondary schools. In Table 6, the results of the analysis are shown.

**Table 6: Principals' Views on Participation of Students in Public Secondary Schools**

Item	n (%)	n (%)	n (%)	n (%)	n (%)	Mean	Std.Dev	Interpretation
Closure of schools during COVID-19 pandemic disrupted learning.	71(80.7)	17(19.3)	-	-	-	4.81	0.397	Strongly agree
Containment measures of COVID-19 shifted learning from schools to home schooling.	14(15.9)	51(58.0)	5(5.7)	18(20.5)	-	3.69	0.975	Agree
Parental support and guidance was necessary for the success of home schooling.	25(28.4)	63(71.6)	-	-	-	4.28	0.454	Strongly agree
Closure of schools during COVID-19 pandemic decreased access to education facilities such as libraries and laboratories.	42(47.7)	39(44.3)	7(8.0)	-	-	4.40	0.635	Strongly agree
Students and teachers relied on technology to ensure continued learning during the COVID-19 pandemic	22(25.0)	44(50.0)	16(18.2)	6(6.8)	-	3.86	1.019	Agree
Online education during COVID-19 pandemic was hindered by poor network coverage.	65(73.6)	22(25.0)	-	-	-	4.70	0.590	Strongly agree
Online education during COVID-19 pandemic was hindered by lack of power/electricity	33(37.5)	49(55.7)	5(5.7)	1(1.1)	-	4.30	0.628	Strongly agree
Lack of digital skills among students affected class attendance during COVID-19 Pandemic.	53(60.2)	30(34.1)	-	5(5.7)	-	4.49	0.773	Strongly agree
Containment measures of COVID-19 hindered students from participating in drama and music	76(86.4)	12(13.6)	-	-	-	4.86	0.345	Strongly agree
Containment measures of COVID-19 prevented students from engaging in sports and games	74(84.1)	13(14.8)	-	-	-	4.85	0.359	Strongly agree
Revised school calendar due to Containment measures of COVID-19 affected content coverage	83(94.3)	5(5.7)	-	-	-	4.94	0.233	Strongly agree

Findings on Table 6 reveal that all (100.0%) of the school principals who participated in the study agreed that closure of schools due to containment measures of COVID-19 led to disruption of learning in public secondary schools in Machakos county, Kenya. Consequently, this shifted learning from schools to home schooling as reported by most (73.9%) of the respondents. All (100.0%) of the principals also agreed that parental support was necessary for the success of home schooling.

A significant majority (92.0%) of respondents agreed, with 8.0% disagreeing, that access to educational resources including libraries and laboratories was hampered by school closures. According to the majority (75.0%) of the responders, most teachers and students depended on technology to guarantee that learning continued during the COVID 19 pandemic. Only 6.8% of the principals disagreed, while 18.2% were unsure. According to the majority of respondents (100.0%) and 94.3% of the respondents, respectively, inadequate network and lack of electricity were obstacles to online learning during the extended closure of schools due to COVID-19 containment efforts. The report also found that 100 percent of principals agreed that Containment measures of COVID-19 prevented students from participating in sports and games, music and theatre, and other extracurricular activities. The study also found that the changed school schedule brought about by Containment measures of COVID-19 had an impact on content coverage because of its short duration, as noted by all (100.0%) of the respondents.

#### **Descriptive Analysis of Teachers Responses on Containment Measures of COVID-19 and participation**

Regarding the impact of Containment measures of COVID-19 on participation in public secondary schools in Machakos County, Kenya, the researcher also sought the perspectives of teachers. Table 7 presents the conclusion



**Table 7: Teachers’ Views on Participation of Students in Public Secondary Schools**

Item	SA n (%)	A n (%)	NS n (%)	D n (%)	SD n (%)	Mean	Dev	Interpretation
Closure of schools during COVID-19 pandemic disrupted learning.	61 (72.6)	21(25.0)		2(2.4)		4.68	0.604	Strongly agree
Containment measures of COVID-19 shifted learning from schools to home schooling.	11(13.1)	51(60.7)	3(3.6)	19(22.6)		3.64	0.977	Agree
Parental support and guidance was necessary for the success of home schooling.	22(26.2)	54(64.3)	2(2.4)	6(7.1)		4.10	0.754	Agree
Closure of schools during COVID-19 pandemic decreased access to education facilities such as libraries and laboratories.	32(38.1)	49(58.3)	3(3.6)			4.35	0.549	Strongly agree
Students and teachers relied on technology to ensure continued learning during the COVID-19 pandemic	14(16.7)	52(61.9)	7(8.3)	9(10.7)	2(2.4)	3.80	0.929	Agree
Online education during COVID-19 pandemic was hindered by poor network coverage.	36(42.9)	45(53.6)	3(3.6)			4.39	0.560	Strongly agree
Online education during COVID-19 pandemic was hindered by lack of power/electricity	41(48.8)	32(38.1)	5(6.0)	6(7.1)		4.29	0.872	Strongly agree
Lack of digital skills among students affected class attendance during COVID-19 Pandemic.	42(50.0)	34(40.5)	8(9.5)			4.40	0.661	Strongly agree
Containment measures of COVID-19 hindered students from participating in drama and music	68(81.0)	14(16.7)	2(2.4)			4.79	0.468	Strongly agree
Containment measures of COVID-19 prevented students from engaging in sports and games	62(73.8)	20(23.8)	2(2.4)			4.71	0.505	Strongly agree
Revised school calendar due to Containment measures of COVID-19 affected content coverage	55(65.5)	29(34.5)				4.65	0.478	Strongly agree

According to data in Table 7, the majority of teachers (95.6%) believed that learning was disrupted while schools were shut down due to COVID-19 pandemic, with only 2.4% disagreeing. According to the majority of teachers (90.5%), the report also shows that learning has transferred from traditional classroom settings to homeschooling. 96.4 percent of the teachers felt that parental support was essential for homeschooling to be successful, with 2.4% disagreeing and 7.1% being unsure. Most teachers (96.4%) also agreed that fewer students had access to education due to school closures during the COVID-19 pandemic, with only 3.6% disagreeing. When schools were closed for an extended period owing to COVID-19 containment efforts, a significant percentage of teachers (78.5%) noted that both students and teachers relied on technology to guarantee that learning continued. However, as noted by the majority (96.5%) and 86.9% of respondents, respectively, inadequate network coverage and a lack of electricity were barriers to online education. According to the majority of teachers (90.5%), pupils' lack of digital literacy had an impact on their attendance in class during the extended closure of the schools caused by COVID-19 containment efforts. Ninety-six percent of the teachers reported that the containment measures prevented pupils from participating in music and theatre, and another 97.6% said they did not play sports. The new school calendar had an impact on material covered because of the short terms, according to all of the teachers (100.0%).

#### **Descriptive Analysis of Students Responses on Containment measures of COVID-19 and Participation**

Regarding the effect of containment measures for COVID-19 on students' participation at public secondary schools, responses from the students were collected and are displayed in Table 8.

**Table 8: Students' Views on effect of containment measures on Participation**

Statement	SA n (%)	A n (%)	NS n (%)	D n (%)	SD n (%)	Mean	Dev	Interpretation
Closure of schools during COVID-19 pandemic disrupted learning.	125(66.1)	51(27.0)	7(3.7)	6(3.2)		4.56	0.717	Strongly agree
Containment measures of COVID-19 shifted learning from schools to home schooling.	24(12.7)	106(56.1)	26(13.8)	20(10.6)	13(6.9)	3.57	1.062	Agree
Parental support and guidance was necessary for the success of home schooling.	30(15.9)	86(45.5)	37(19.6)	26(13.8)	10(5.3)	3.53	1.079	Agree
Closure of schools during COVID-19 pandemic decreased access to education facilities such as libraries and laboratories.	50(26.5)	95(50.3)	21(11.1)	19(10.1)	4(2.1)	3.89	0.980	Agree
Students and teachers relied on technology to ensure continued learning during the COVID-19 pandemic	24(12.7)	101(53.4)	26(13.8)	15(7.9)	23(12.2)	3.47	1.183	Agree
Online education during COVID-19 pandemic was hindered by poor network coverage.	46(24.3)	70(37.0)	42(22.2)	25(13.2)	6(3.2)	3.66	1.083	Agree
Online education during COVID-19 pandemic was hindered by lack of power/electricity	40((21.2)	82(43.4)	17(9.0)	34(18.0)	16(8.5)	3.51	1.245	Agree
Lack of digital skills among students affected class attendance during COVID-19 Pandemic.	73(38.6)	80(42.3)	14(7.4)	16(8.5)	6(3.2)	4.05	1.043	Agree
Containment measures of COVID-19 hindered students from participating in drama and music	99(52.4)	67(35.4)	17(9.0)	6(3.2)		4.34	0.888	Strongly agree
Containment measures of COVID-19 prevented students from engaging in sports and games	90(47.6)	82(43.4)		11(5.8)	6(3.2)	4.26	0.964	Strongly agree
Revised school calendar due to Containment measures of COVID-19 affected content coverage	62(32.8)	78(41.3)	16(8.5)	33(17.5)		3.89	1.052	Agree

Information presented on Table 8 reveal that majority (93.1%) of the students like the principals and the teachers agreed that closure of schools disrupted learning with 3.2% disagreeing and another 3.7% not being sure. A high (68.8%) of the students agreed that learning shifted from school to home schooling with another 19.6% not being sure while 17.5% disagreed. Pertaining to whether parental guidance was necessary for the success of home schooling, 61.4% of the students agreed with another 12.2% being of the contrary opinion. Large proportion (76.8%) of the students pointed out that there was decreased access to educational facilities such as libraries and laboratories due to containment measures of COVID-19 however 11.1% were undecided while 12.2% disagreed. Further the study sought to unearth whether students and teachers relied on technology to ensure continued learning during the shutdown of schools due to containment measures of COVID-19. Majority (66.1%) of the students agreed, 13.8% were not sure while 20.1% disagreed. Most (61.3%) of the students also reported that online learning during extended closure of schools was hindered by poor network coverage. Only 16.4% disagreed with another 22.2% not being sure. Most (64.6%) of the students claimed that a lack of power or electricity made it difficult for them to do their online coursework during the lengthy school closures brought on by containment procedures of COVID-19. When schools were closed for an extended period of time owing to containment efforts COVID-19, many students (80.9%) blamed a lack of digital literacy as a barrier to their ability to attend lessons. However, 11.7% of them disagreed, and 7.4% were unsure. Containment measures of COVID-19 hindered students from participating in drama and music as well as prevented students from engaging in games and sports as pointed out by a large proportion (87.8%) and 91.0% of the teachers respectively. Majority (74.1%) of the students also noted that revised school calendar due to containment measures of COVID-19 affected content coverage hence impacting on participation of students in public secondary schools in Machakos County, Kenya.

The information obtained from principals, teachers and students show that participation of students in public secondary schools in Machakos County was affected by the containment measures of COVID-19 due to: prolonged closure of schools which shifted learning to home school. As a result, there was decreased access to education facilities such as libraries and laboratories. Moreover, students and teachers relied on technology which was hampered by poor network coverage and lack of power/electricity supply as well as lack of digital skills. Acquisition of skills was also hindered by failure to participate in games, sports, drama and music due to containment measures of COVID-19.

These results are consistent with those of Eucheria and Obafemi (2020), who found that COVID-19 had negative effects on education in Nigeria, including disruptions to learning and restricted access to educational and research facilities. Additionally, the results demonstrated how significantly educators and students depended on technology to guarantee online learning. Online education was hampered by a poor network and power infrastructure as well as teachers and students with limited digital proficiency. A Commonwealth Secretariat (2021) assessment on the impact of COVID-19 on education in Commonwealth member countries found that e-learning resources were not reaching rural areas due to a lack of internet technology. The findings of the principals, teachers, and students were in agreement with this finding. Due to the parents' illiteracy, a lack of learning resources, and a lack of energy, at-home study was not feasible. The researcher claims that the containment strategies for COVID-19 exposed various students to unequal learning opportunities, which had a detrimental impact on their engagement, retention, and learning outcome.

### **Hypothesis Testing for Participation**

Objective one examined the effect of containment measures for COVID-19 on the Participation of students in public secondary schools in Machakos County, Kenya. The null hypothesis H01 stated: The containment measures of COVID-19 have no statistically significant effect on the Participation of students in secondary schools in Machakos

County, Kenya. For the researcher to test this hypothesis, a regression analysis at a 95% confidence level ( $\alpha = 0.05$ ) was conducted. Containment measures of COVID-19 as an indicator of the independent variable were regressed against the dependent variable Participation of students.

**Table 9: Regression Model for Principals on participation of students**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.418 <sup>a</sup>	.175	.165	.22584

a. Predictors: (Constant), Containment measures of COVID-19

Based on the findings in Table 9, the Pearson association Coefficient R value of 0.418 suggested a favourable association. The conclusion is that the connection between participation rate and the independent variable containment measures of COVID-19 was rather moderate. Additionally, the coefficient of determination R Square was calculated as 0.175, which indicates that 17.5% of the variable involvement can be explained by the COVID-19 variable confinement methods. There is therefore significant relationship between containment measures of COVID-19 and Participation of students. The linear regression of principals’ responses on Containment measures of COVID-19 was computed and the results obtained are shown on Table 10.

**Table 10: Regression Coefficients for the containment measures of COVID-19**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.249	.287		11.305	.000
	Containment measures of COVID	.276	.065	.418	4.267	.000

a. Dependent Variable: Participation Regression

The findings from Table 10 reveal that P-value is 0.0000 which is  $<0.05$ . The containment measures of COVID-19 therefore had a significant influence on participation of students in public secondary schools in Machakos County, Kenya. The t value was found to be 4.267 and is  $>2$  which further confirms that the effect of containment measures of COVID-19 had significant effect on participation. Coefficient B was found to be 0.276 and the implication is that 1% rise in containment measures of COVID-19 makes the dependent variable participation to increase by 0.276%. Therefore, the null Hypothesis stated as: Containment measures of COVID-19 have no statistical significant effect on participation of students in secondary schools in Machakos County, Kenya is rejected.

The regression equation used by the researcher to approximate the degree of participation is as follows:

$$\text{Part} = 0.276(\text{CMC}) + 3.249$$

Where Part=Participation

CMC= Containment measures of COVID-19

The results shown in Table 29 show that the Containment measures of COVID-19 had a significant impact on participation, disproving the null hypothesis that these measures had no statistically significant impact on students’ participation at secondary schools in Machakos County. The findings regarding how the Containment measures of COVID-19 impacted student participation are consistent with those of the Commonwealth Secretariat (2021)

regarding the impact of the COVID-19 on education in Commonwealth member countries, which showed that E-learning materials were not reaching the rural areas due to lack of internet technology, illiteracy of the parents contributed to lack of support for learning, and lack of power supply inhibited study at home.

Further the researcher also obtained regression model for Teachers from the teachers' responses on the effect of containment measures of COVID-19 on participation. The results are presented on Table 11.

**Table 11: Regression Model for Teachers on participation of students**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.403 <sup>a</sup>	.163	.152	.48235

According to findings in Table 11, there was relatively moderate association since the Pearson association Coefficient R value was 0.403. This shows that there is only a moderate amount of association between participation and the containment measures of COVID-19 (independent variable). Additionally, the containment measures of COVID-19 variable can explain 16.3% of the variable participation, according to the coefficient of determination R Square, which was calculated as 0.163. There is therefore significant relationship between containment measures of COVID-19 and Participation of students. The linear regression of teachers' responses on Containment measures of COVID-19 was computed and the results obtained are shown on Table 12.

**Table 12: Regression Coefficients for the containment measures of COVID-19**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.838	.443		4.152	.000
Containment measures of COVID	.436	.109	.403	3.989	.000

Dependent Variable: Participation

The findings from Table 12 reveal that P-value is 0.0000 which is <0.05. The containment measures of COVID-19 therefore had a significant influence on participation of students in public secondary schools in Machakos County, Kenya. t value was found to be 3.989 and is >2 which further confirms that the containment measures of COVID-19 had significant effect on participation. Coefficient B was found to be 0.436 and the implication is that 1% rise in containment measures of COVID-19 makes the dependent variable participation to increase by 0.436%. Therefore, the null Hypothesis stated as: Containment measures of COVID-19 have no statistical significant effect on participation of students in secondary schools in Machakos County, Kenya is rejected.

The regression equation used by the researcher to approximate the degree of participation is as follows:

$$\text{Part} = 0.436(\text{CMC}) + 1.838$$

Where Part=Participation

CMC= Containment measures of COVID-19

The findings presented in Table reveal that Containment Measures of COVID-19 had moderate significant on participation and this makes the null Hypothesis that; Containment measures of COVID-19 have no statistical significant effect on participation of students in secondary schools in Machakos County be rejected.

Similarly, the researcher obtained the regression model for students’ responses on participation. The results obtained are presented on Table 13.

**Table 13: Regression Model for Students on participation of students**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.312 <sup>a</sup>	.097	.092	.58087

According to findings in Table 13, there was a moderately positive association with a Pearson association Coefficient R of 0.312. The implication is that there is only a minor amount of connection between participation and the independent variable containment measures of COVID-19. Additionally, the containment measures of COVID-19 variable can explain 9.2% of the variable participation, according to the coefficient of determination R Square, which was calculated as 0.092. There is therefore significant relationship between containment measures of COVID-19 and Participation. The linear regression model for students’ responses on effect of containment measures of COVID-19 was computed and the findings are shown on Table 14.

**Table14: Regression Coefficients for Students on participation**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.176	.383		5.677	.000
	Containment measures of COVID-19	.423	.094	.312	4.484	.000

a. Dependent Variable: Participation

The findings from Table 14. Reveal that P-value is 0.0000 which is <0.05. The containment measures of COVID-19 therefore had a significant influence on participation of students in public secondary schools in Machakos County, Kenya. t value was found to be 4.484 and is >2 which further confirms that the containment measures of COVID-19 had significant effect on participation. Coefficient B was found to be 0.423 and the implication is that 1% rise in containment measures of COVID-19 makes the dependent variable participation to increase by 0.423%. Therefore, the null Hypothesis stated as: Containment measures of COVID-19 have no statistical significant effect on participation of students in secondary schools in Machakos County, Kenya is rejected.

The regression equation used by the researcher to approximate the degree of participation is as follows:

$$\text{Part} = 0.423(\text{CMC}) + 2.176$$

Where Part=Participation

CMC= Containment measures of COVID-19

The results shown in Table 14 show that the containment measures of COVID-19 had a significant effect on participation, disproving the null hypothesis that these measures had no statistically significant effect on students' participation in secondary schools in Machakos County.

According to the results, teachers had the highest percentage of R square at 16.3%, followed by learners at 9.2% and principals at 17.5%. The researcher comes to the conclusion that containment measures of COVID-19 have a major impact on student involvement in public secondary schools in Machakos County, Kenya. The results concur with those of Huber et al (2020), a study that focused on German, Austrian, and Swiss students between the ages of 10 and 19. According to the report, pupils' weekly learning time was cut by between 4 and 8 hours during the COVID-19 lockdown compared to when schools are open. Less learning results from the loss of instructional time, which has an adverse effect on participation. Higgins et al. (2012) contend that rather than replacing instruction, technology should support it. The rapid switch from in-person instruction to online instruction during the extended school closures brought on by containment measures of COVID-19 did not result in higher educational attainment. The results of this study showed that because of containment measures of COVID-19, schools did not use technology to teach parents how to mentor students at home. This shows that the majority of pupils were left to complete their schoolwork without parental supervision, which resulted in little content being covered as a result of lost instructional time that had a negative influence on participation.

#### 4.5.5. Interview findings on Containment Measures of COVID-19 and Participation

The opinions and views of the CQASO and SCQASO on how participation of students was affected by the containment measures of COVID-19 were sought. The responses to the interview questions are presented in excerpt 1.

##### Excerpt 1

##### Participation

**Researcher:** *What is your opinion on the effect of containment measures of COVID-19 on participation of students in public secondary schools?*

**Respondent 1:** *The containment measures of COVID-19 largely disrupted learning leading to the suspension of face to face learning in schools. Students therefore never attended schools during the prolonged closure of schools and never participated in games, sports, drama and Music. However, some schools adopted use of online learning platforms to engage their learners with little success.*

**Respondent 2:** *COVID-19 pandemic brought everything to a sudden halt in our public secondary schools. The abrupt closure of schools was a shock to educators, school administrators, teachers, learners and parents. Nobody expected the closure to be so prolonged and nobody was prepared for it. In my view very little learning took place during this period of time. Most of the parents who were supposed to supervise and guide the learning at home were too busy with their daily programs.*

**Respondent 3:** *Learning was disrupted to a magnitude never witnessed before during the COVID-19 pandemic. Nobody expected the closure of schools to last for so long. Teachers were not prepared for delivery of instructions off the school environment. There were attempt however by a few schools to engage their learners through mobile SMS and online learning platform. This was interrupted by poor network coverage in the remote areas and lack of gadgets in mostly the humble backgrounds.*

**Respondent 4:** *During the prolonged closure of schools due to COVID -19 many schools did not engage their learners in learning activities, sports, games, drama or Music. As you know the closure was sudden and nobody could guess it would take so long for schools to reopen. A few well established schools relied on online learning and SMS but I am sure some learners were denied the opportunity either*



*because the parents could not afford the electronic gadgets, lack of electricity or poor network coverage*

**Respondent 5:** *Learning stopped in most schools when the schools closed due to containment measures of COVID-19. There was an attempt by schools to engage learners through the online platforms but as you know many learners were not adequately prepared for this. In my opinion I would say little learning took place. All co-curricular activities were also suspended to adhere to social distancing protocol.*

The views and the opinions of the CQASO and the SCQASOs are in agreement with the findings from the principals, teachers and students who pointed out that the containment measures of COVID-19 led to the suspension of face to face learning largely interrupting learning. Consequently, teachers and learner embraced online learning platforms. Online learning was however hampered by lack of digital skills, poor network coverage and lack of electricity/power. There was also total suspension of co-curricular activities in order to observe the social distancing protocol. The findings are consistent with the findings of Sundarasan et al (2020) who pointed out that many students did not receive any instruction, feedback or interaction with teachers during the prolonged closure of schools due to limited access to technologies. The findings also concur with findings of UNESCO (2020) that interrupted learning, unequal access to digital learning portal, social isolation and increased pressure on school systems as some of the harmful effect of school closures during the COVID-19 pandemic. The finding of this study show that prolonged closure of school due to containment measures of COVID-19 had a negative effect on participation of students in public secondary schools in Machakos County, Kenya.

### **Conclusions of the Study**

The first study objective sought to establish the effect of containment measures of COVID-19 on participation of students. From the findings the researcher concluded that there is significant effect of containment measures of COVID-19 on participation. This was as a result of prolonged closure of schools, shifting learning from schools to home. Unlike the school environment, home environment is not designed for conducive teaching and learning. The learning opportunities hence vary depending on the learners social-economic backgrounds. Home schooling relied on online learning and depended on parental guidance and support. Students from low social economic background whose parents could not afford electronic gadgets and internet connectivity for online learning were not able to access the online learning platforms. Consequently, this may have affected instructional time and content coverage negatively impacting on their participation. Poor network coverage and lack of power characterizes rural areas where most of the students from low social economic background reside. From the study findings it was established that most of the students resided in the rural areas probably to escape the repercussions of the containment measures of COVID-19 and the rapidly spreading virus. Little learning may therefore have occurred among students due to lack of internet coverage and power. There is need therefore for schools to embrace technology as an alternative means of delivery of curriculum in the event of abrupt disruption of schooling. This can be realized by making computer studies a core subject in order to equip learners with digital skills for online learning. Schools should also embrace online teaching and learning which is critical in case of disruptions due to outbreak of disease pandemics, natural disasters or human conflict.

### **Recommendations**

Ministry of education should make computer studies a core subject to ensure students are equipped with digital skills that will enable them to embrace technology and ensures access to equal learning opportunities even when schooling is disrupted leading to prolonged closure of schools due to disease pandemics, natural disaster or human conflict.

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