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Kato Masika Erastus, PhD
Masinde Muliro University of
Science and Technology,
Kakamega, Kenya

Information Communication Technology Use and Its Methodological Motivation on the Enhancement of Student Centred Learning among Public Secondary School Students in Bungoma County, Kenya

Kato Masika Erastus

Abstract

The objective of this study was to establish the extent to which Information and Communication Technology (ICT) methodological motivation had led to student centred learning (SCL) skills among public secondary school students in Bungoma County, Kenya. The study population was 71 respondents selected from 71 schools. The sample size was 19 respondents selected from 19 schools. The study used questionnaire and interview guide. Descriptive (frequencies, percentages and means) and inferential statistics (correlation and regression analyses) were used. Data was analyzed with the help of the Statistical Package for Social Sciences (SPSS). Qualitative data was analyzed through content analysis. The simple linear stepwise multiple regression results indicated that ICT methodology and its motivation had an insignificant impact on SCL. The study's recommendations were: school managers to improve on ICT methodological motivation through embracing modern ICT teaching techniques and learner involvement in handling various technologies for learning. The findings of this study may be used to guide ICT teachers and learners on the need to improve teaching techniques especially teacher facilitation of the learners to handle technology appropriately for the enhancement of SCL.

Keywords: Information Communication, Technology, Motivation, Student Centred Learning, and methodological Motivation

1. Introduction

This study evaluated the extent to which ICT methodology for learning had motivated learners and led to the enhancement of Student Centred Learning (SCL) skills in public secondary schools in Bungoma County, Kenya. The study was focused on the evaluation of ICT teaching techniques among teachers and how they had impacted on learner motivation and achievement of SCL. The study adopted mixed methods research design. Data was collected through questionnaires and interview schedules. Results indicate that teachers highly embraced ICT use in classroom teaching hence were motivated. Teacher motivation however was not reflected in the learner use of technology. The study recommended for more exposure of teachers to use of technology for them to be able to facilitate learner use of the same technology.

2. Background to the study

ICT Methodological motivation is the motivation derived from the teacher facilitation techniques and which makes the lesson more enjoyable by the learners. The use of relevant ICT methods and techniques can motivate learners to achieve their educational goals and self-efficacy. In most schools that offer ICT in Bungoma County Kenya, teacher facilitation of ICT learning was hampered due to inadequate tools and improper use of the tools serving the interests of the teacher rather than the learners (Shihundu, 2014). Studies show that teacher methodological motivation was high among teachers. Studies in Tanzania and in Malaysia on the extent of ICT use among students in secondary schools revealed that there was ICT methodological motivation among teachers; however teachers expressed a lot of

Correspondence:
Kato Masika Erastus, PhD
Masinde Muliro University of
Science and Technology,
Kakamega, Kenya

difficulties in handling technology for learning (Ngeze 2017; Bee & Chia, 2014).

SCL approaches which are constructive in nature empower students to build upon their knowledge and think critically, work in teams and solve problems collectively. Students are challenged to develop problem solving skills, exercise analytical, critical and creative thinking in their work (SCL, 2010).

The success of internet use in teaching and learning highly depends on teacher competencies and attitudes. In most studies the attitude of teachers towards use of ICT in teaching are highly positive, however their implementation of ICT use reveal contradicting outcomes (Ghavifkr & Rosdy, 2015). Studies show that in most developing countries teachers are reluctant to use computers because of lack of technical skills and out of the fear that the equipment would fail. Other barriers affecting teachers' effective use of ICT were cited as lack of internet, low connectivity and printer failure (Tiiru & Johnson, 2012).

A study by Bee & Chia (2008) on the extent of ICT use in secondary schools in Malaysia indicated that elderly teachers were more active adopters of ICT in classroom teaching compared to young teachers who were the majority. Old teachers to a higher extent exploited technology for teaching. It was also found that teachers with higher training qualifications and those with prior ICT training had higher competences in ICT use for teaching. Teachers' use of interactive multimedia software had motivated students and led to improved performance.

Studies by (Mukanda, 2015; Namulanda, 2010; Gulati, 2008, & Alam & Islam, 2008) revealed that teachers have continued to use traditional methods and techniques in most countries of Africa such as Kenya, Uganda and Botswana for content delivery. The teachers should be helped through attitude change programmes and training as they might have lacked technological skills and the necessary competences to assist the learners to achieve SCL skills through technology use. Teachers and learners who still hold on traditional methods of content delivery and learning derail the learning process from the achievement of SCL skills. In European countries such as the USA, United Kingdom and Malta a lot of importance has been attached to technical support in ICT implementation for learning to assist the teachers have the necessary ease of use of technology in classroom (Tiiru & Johnson, 2012). Teachers therefore play the facilitation role and consultants by designing a road map for learners.

According to LaBanca *et al.*,(2015), the ways of enhancing SCL skills through technology include empowering the learner, organizing of learning activities, adoption of technological tools in class, making student learning easy and subjection of students to regular learning and self-evaluation. These activities capture learner concentration, interests, motivation and more importantly achievement of SCL skills because the learner is in charge of his/her classroom learning activities.

3. Statement to the Problem

ICT methodological motivation among teachers is a key feature which is basic and necessary for SCL to take off. In Africa and most developing countries learners have difficulties in deriving satisfaction from ICT facilitation methods of their teachers which serve teachers more than

learners. In Bungoma county Kenya, lack of access to internet, use of traditional teaching methods and few tools among teachers has greatly undermined teacher competences as ICT facilitators in the enhancement of SCL (Shihundu, 2014).

4. Objective of the study

The specific objective of the study was to establish the influence of ICT methodological motivation on the enhancement of SCL skills among public secondary school students in Bungoma County.

2.0 Hypothesis of the study

HO: ICT methodological motivation has no significant influence on the enhancement of SCL skills among public secondary school students in Bungoma County, Kenya.

2.1 Methodology

This study adopted both qualitative and quantitative research methods where descriptive survey and inferential research designs were used to increase the validity of the findings and for the purposes of achieving optimal results (Saunders, Lewis & Thornhill, 2009). Data was collected through questionnaires and interview guide and analyzed through SPSS.

5. Demographic Information

2.2 Target Population

The target population of this study was 71 ICT teachers in all the 71 public secondary schools that offer computer studies in Bungoma County. The sample size was 19 teacher respondents, however 3 schools were excluded from the study because they had been involved in the pilot study. This gives a sample size of 16.

2.3 Gender representation of ICT Teachers

The study sought to establish the gender representation of the teacher respondents. The results are presented in table 1.6

Table 1.6: Gender Distribution of ICT Teachers

	Gender	Frequency	Percentage
Valid	Male	12	75
	Female	4	25
	Total	16	100

Source: Field Survey 2018

Table 1.6 shows that male ICT teachers constituted 12 (75 %) while female ICT teacher respondents were 4 (25 %) in the study. Therefore this implies that more male teachers than female teachers participated in the study.

2.4 Age distribution of ICT teachers

The study investigated the age distribution among the teacher respondents. Table 1.7 presents the results

Table 1.7 Age Distribution of ICT Teachers

	Age	Frequency	Percentage
Valid	25-30	7	43.3
	31-35	6	37.5
	36-40	2	12.5
	46 and above	1	6.2
	Total	16	100

Source: Field Survey 2018

Table 1.7 shows the distribution of the sample size with respect to age for the ICT teachers as follows: 25-30 years (43.8 %), 31-35 years (37.5 %), 36 – 40 (12.5 %) and 40 and above (6.2 %). Majority of the ICT teacher respondents were in the age bracket of (25 - 30 years). This implies that majority of the teacher respondents were fairly young and were expected to be aware of technology use, learner motivation and current trends in education thus suitable to meet the objectives of the study.

2.5 ICT Teachers’ Level of Training

The study sought to establish the respondents’ level of training. The results are presented in table 1.8

Table 1.8 ICT teachers’ level of training

Percentage	Frequency
ValidCertificate	1 6.2
Diploma	11 68.8
Graduate	4 25
Total	16 100

Source: survey data (2018)

Table 1.8 shows the educational level of the ICT teacher respondents distributed as follows: untrained (0 %), certificate 1 (6.2 %), diploma 11 (68.8 %), and degree 4 (25.4 %). Majority of teacher respondents were therefore diploma holders 11 (68.8 %). This therefore implies that there was a qualified workforce personnel in the ICT teaching fraternity in public secondary schools who were expected to deliver on ICT use motivation and enhancement of SCL skills among learners.

2.6 Distribution of ICT Teachers’ by Teaching Experience

The study sought to establish the respondents’ teaching experience. The results are presented in table 1.9

Table 1.9: ICT Teachers’ Teaching Experience

Valid		Frequency	Percentage
	1 – 5yrs	10	62.5
6 – 10yrs	4	25.0	
11 -18yrs	2	12.5	
19 and above	0		
Total	16	100	

Source: Survey Data (2018)

Table 1.9 shows ICT teachers’ experience in the use of ICT for learning, distributed as follows: 1-5 years (62.5 %), 6-10 years (25 %), 11-18 years (12.5 %) and 19 and above years (0 %). Majority of the workforce (62.5 %) had teaching experience of between (1-5) years only. This could be attributed to the fact that the subject had not been taught for many years in most schools that embraced it especially the county and sub county schools.

6. Data Presentation and Analysis

Table 1.22: ICT Teachers’ questionnaire Responses on Methodological Motivation

Statement	Strongly Agree		Agree		Undecided		Disagree		Strongly Disagree		Mean
	F	%	F	%	F	%	F	%	F	%	
I use power point in facilitating learning	9	56.2	3	18.8	1	6.2	2	12.5	1	6.2	3.874

2.7 ICT Teachers’ Responses on the Availability of ICT Methodological Motivation

ICT teachers were asked to respond ‘YES’ or ‘NO’ to the availability of the methodological motivation. Table 1.20 presents the results.

Table 1.20: ICT Teachers’ Responses on Availability of Methodological Motivation

	Frequency	Percentage
Valid Yes	15	93.8
No	1	6.2
Total	16	100.0

Source: Field Survey (2018)

Table 1.20 shows that 15 (93.8 %) of the teacher respondents confirmed the availability of ICT methodological motivation by responding ‘YES’ to the statement ‘Do you think the ICT teaching-learning methods used by teachers have enhanced learners’ motivation for the achievement of SCL Skills, while 1(6.2 %) responded ‘NO’ to the statement. Therefore the majority of the teachers (93.8 %) recorded presence of methodological motivation with their teaching-learning methods.

2.8 ICT Teachers’ Responses on the Extent to which Methodological Motivation Enhanced SCL

The study investigated the extent to which ICT methodological motivation had enhanced SCL. The results are presented in table 1.21.

Table 1.21: ICT Teachers’ Responses on the Extent to which Methodological Motivation Enhanced SCL

	Frequency	Percentage	Mean
Valid	Lowly	1	6.2 0.124
	Moderately	6	37.5 1.125
	Highly	8	50.0 2.000
	Very Highly	1	6.2 0.31
	Very Highly	16	100.0 3.559
Total Aggregate			7.118 2.024

Key: Very lowly 1, Lowly 2, moderately 3, highly 4 very highly 5
Source: Field Survey 2018

Table 1.21 shows that teacher respondents (6.2 %) to a very low extent (0.124 proportion of the mean), recorded ICT methodological motivation, and at moderate extent 37.5 % (1.125 proportion of the mean). To a high extent, 50 % (1.124 proportion of the mean) and to a very high extent 6.2 % (0.31 proportion of the mean), there was methodological motivation. The aggregate mean was 2.024 implying generally a low extent.

2.9 ICT Teachers’ Responses on Methodological Motivation statements

ICT teacher respondents were asked to indicate their level of agreement or disagreement to five statements on a 5-point likert scale. Table 1.22 shows the results.

I always ensure that learners are given regular online assignments	2	12.5	4	25.0	4	25.0	3	18.8	3	18.8	2.189
I encourage learners to use online syllabus	2	12.5	6	37.5	1	6.2	4	25.0	3	18.8	2.813
I organize online materials for learning activities	5	31.2	7	43.8	1	6.2	2	12.5	1	6.2	3.624
I encourage students to practice building connections with material at their own pace	5	31.2	7	43.8	3	18.8	-	-	1	6.2	3.376
Aggregate											3.175

Key: strongly agree = 5, agree = 4, undecided = 3, disagree =2 strongly disagree = 1

Source: Field survey (2018)

Table 1.22 indicates the following responses on the statement, ' I use power point in facilitating learning': strongly agree were 9 (56.2 %), agree 3(18.8 %), undecided 1(6.2 %), disagree 2 (12.5 %) and strongly disagree (6.2 %). Therefore 75 % of the respondents strongly agreed and agreed to the statement while 25 % strongly disagreed and disagreed to the statement. The mean was (3.874). This implies that teachers were highly motivated to use power point. Use of power point makes the teachers' work easy and faster for syllabus coverage.

ICT Teachers' responses to the statement ' I encourage online assignments' were as follows: strongly 2 (12.5%), agree 6(37.5 %), undecided 4(25.0 %), disagree 3(18.8 %) and strongly disagree 3 (18.8 %). Respondents who strongly agreed and those who agreed were more than those who disagreed and agreed. The mean was (2.189). This implies that teachers were competent in using of online assignments which was positive for learning

ICT Teachers' responses on the statement ' I use online syllabus' were as follows: strongly agree 2 (12.5 %), agree 4 (25.0 %), undecided 1(6.2 %), disagree 4(25.0 %) and strongly disagree 3 (18.8 %). Therefore slightly more respondents disagreed (25 %) and strongly disagreed (18.8 %) to the statement than those who strongly agreed (25 %) and agreed (6.2 %) respectively. The overall mean was (2.813) implying that to a moderate extent learners were encouraged to use online syllabus hence were motivated.

ICT Teachers' responses to the statement ' I organize online materials for learning activities' were as follows: strongly agree 5(31.2 %), agree 7(43.8 %), undecided 1 (6.2 %), disagree 2(12.5 %) and strongly disagree 1 (6.2 %). The overall mean was (3.624).

ICT Teachers' responses to the statement ' I encourage students to practice building connections with materials at their own pace' were: strongly agree 5(31.2 %), agree 7(43.8 %), undecided 3 (18.8 %), disagree 0 (0 %) and strongly disagree 1 (6.2 %). Therefore over 80 % of the

respondents strongly agreed and agreed to have encouraged students to practice building connections with materials at their own pace. The mean was 3.376. Therefore the aggregate mean for questionnaire responses on methodological motivation was 3.175 which were moderate.

2.10 Regression Analysis of ICT Methodological Motivation on SCL skills

The study tested H₀₃ to determine the influence of ICT methodological motivation on SCL and the hypothesis was stated as follows:

H₀₃: ICT Methodological Motivation has No Significant Influence on the Enhancement of SCL Skills among Public Secondary School Students in Bungoma County. The regression results are presented in tables 1.23 (a – c).

Table 1.23a) Goodness of Fit for ICT Methodological Motivation on SCL

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.067	-.067		79.323

- a. Dependent Variable: SCL skills
- b. Predictors: (Constant), Methodology motivation

Source: Survey Data (2018)

Table 1.23 a) indicates that the adjusted R square was (-.067) meaning that ICT methodological motivation accounted for only - 6.7 percent of the variations in the SCL. This was a negative explanatory power on SCL. The techniques used for teaching and learning in most schools derailed learners away from the achievement of SCL as the relationship was a negative one. This could be attributed to denying of the learner power to handle technology and use of techniques which could not motivate learners. Table 1.23b) shows the ANOVA results for methodological motivation.

Table 1.23 b) ANOVA for the Regression of Methodological Motivation on SCL

Model	Sum of Square	Degree of Freedom	Mean Square	F	Sig.
Regression	5.418	1	5.418	.062	.806b
1 Residual	1216.749	14	86.911		
Total	1222.167	15			

- a. Dependent Variable: SCL skills
- b. Predictors: (Constant), Methodology motivation

Source: Survey Data (2018)

Table 1.23 b) presents an ANOVA summary of F (1, 14) =.062, P = 0.806 where p > 0.05. This implies that ICT methodological motivation had an insignificant influence

on the changes in the SCL hence confirms that the regression model is insignificant at (P > 0.05).

Table 1.23 c) shows the coefficients of ICT methodological motivation and SCL as $\beta = .067, p = 0.806 > 0.05$.

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig
	B	Std. Error	Beta		
Constant	23.598	10.024		2.354	.034
ICT Methodological Motivation	.145	.580	.067	.250	806

Based on the analysis in the tables 1.23 (a-c), the following model was formulated:

$$SCL = 23.598 - .067x_2 + e \dots \dots \dots 3.3$$

Where 23.598= y intercept; constant

-.067 = estimate of expected increase in SCL.

The regression coefficient of -.067 implies that a unit increase in ICT methodological Motivation leads to -.6.7 % increase in SCL. This can be explained that lack of proper ICT teaching techniques for learner motivation may have a negative impact on learning and achievement of SCL. Teachers may have used ICT to perfect on their work while undermining learner interest in ICT use for the achievement of SCL.

2.11 Correlation analysis of ICT Methodological Motivation and SCL skills

The correlation analysis of ICT Use and SCL Skills was performed through SPSS to establish the strength and direction of the relationship between ICT Methodological Motivation and SCL skills. Pearson product moment correlation was used and correlation coefficients were inspected. The results are presented in table 1.24

Table 1.24 Correlation Analysis of ICT Methodological Motivation and SCL skills

ICT Methodological motivation	Pearson correlation	-.067
	Sig2(tailed)	.403
	N	16

Source: Survey Data (2018)

Table 1.24 shows the correlation analysis of methodological motivation and SCL.

The relationship between ICT methodological motivation and SCL was at (- .067, p = .403) the association was weak and the direction was negative. The correlation result also indicates a negative relationship which is an insignificant impact to SCL.

7. Discussion

The above results on ICT methodological motivations indicate that there were high teacher competences in learner facilitation compared to other ICT variables in the study. The mean extent for use of power point was 3.874, online assignments were 2.189, and online syllabus was 2.813 and building connections with materials 3.376. The final aggregate mean for questionnaire statements on methodological motivation on the likert scale items was 3.175 implying that to a moderate extent the teachers were motivated on the basis of the statement. However teachers were not highly qualified as most of them (68.8 %) were diploma holders, who were aged 25-30 constituting (43.8 %). Teachers’ teaching experience ranged between 1-5 yrs (62.5%).

Regarding the gender distribution of ICT teachers in the current study, majority of them were males (75%) and the females constituted only 25 %. This disparity has also been reflected in the student sample size where the number of boys exceeded that of girls in ICT class (Table 4.5). This hence implies that low enrolment of ICT students at secondary school level escalate to training institutions hence low capacity building among the female ICT teachers. Therefore age, gender, level of qualifications and experiences of the teachers were serious barriers against effective delivery of content and may have undermined SCL among the learners.

Use of online assignments and syllabus ranged from low extent to moderate extent implying that teachers were unable to mobilize online resources fully for learning. Teacher competences may have been based on examination scores rather than the application aspect of ICT to motivate learners. It is also worth to note that the student factor was ignored in the methodological motivation and teacher competences hence undermining learner interests and SCL. Teachers’ competences should also be reflected in the learner performance of the expected behavior, which is an SCL skill.

The results on the regression analysis also indicate that the adjusted R square was (-.067) meaning that ICT methodological motivation accounted for only (- 6.7) percent of the variations in the SCL. This was a negative explanatory power on SCL. Therefore the study fails to reject HO3 at $\alpha = 0.05$. ANOVA summary was F (1, 14) =.062, P = 0.806 where p > 0.05. This hence implies that ICT methodological motivation had an insignificant influence on the changes in the SCL.

The correlation analysis results also indicate that the relationship between ICT methodological motivation and SCL was at (r - .067, p = .403) and the direction was negative. This was weak relationship whose direction was negative. The main reason being high teachers’ competences which might have ignored learner interests on SCL.

This study’s finding on presence and the extent of methodological motivation is in agreement with the findings by Mukanda (2014) on ICT use in teaching in Kimilili, Bungoma County, who reported that teacher competences were high in terms of applying the required ICT techniques in teaching physics. Learner factor was however ignored in this particular research. The findings on teachers’ competences also concur with Ngeze (2017) in his research on the effects of ICT use on learning and motivation in Tanzania which revealed that 95.5 % of teachers were motivated to use ICT for teaching and learning process. The finding on age of teachers also concurs with Bee & Chia (2008) who established that older teachers were more competent in ICT use than young teachers among secondary school teachers in Malaysia. Majority of ICT teachers were young (34.5 %) who had the exposure to ICT of between 5-6 years and only 32.8 % had

the exposure of over 9 years.

According to Adetoro (2010), learner online activities which were not supervised by teachers were distracters to learning. In the current study high teacher competences are reported without significant behavior change among learners, implying that teachers did not keenly monitor the learners' online activities. High teacher competences with limited online resources may have undermined learner achievement of SCL. Nehme (2010) also found out that teacher competences alone without organizing learners into study groups, encouraging discussions and more importantly the creation of online environments was an exercise in futility.

8. Conclusion

The objective of the study sought to investigate the influence of ICT methodological motivation on SCL among students in public secondary schools in Bungoma County, Kenya. The descriptive statistics revealed that to a low extent methodological motivation had influenced SCL among students in public secondary schools in Bungoma County, Kenya. The hypothesis of the study stated: ICT methodological motivation has no significant influence on SCL among students in public secondary schools in Bungoma County, Kenya. The regression results indicate that there was no significant influence of ICT methodological motivation on SCL among students in public secondary schools in Bungoma County, Kenya. The correlation results of ICT methodological motivation and SCL were weak and direction negative. The study therefore fails to reject the null hypothesis H_{02} .

9. Recommendations

Regarding the objective, teachers' competences were low in the methodology; hence it was insignificant in learner motivation and enhancement of SCL skills. Teachers should put more emphasis on learner facilitation and motivation rather than being competent in using technology at the expense of learners. Therefore teachers should revisit their methodologies and modify them to improve learner motivation and SCL skills.

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