Teacher Efficacy and Implementation of Competency Based Assessment in Western Kenya

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ABSTRACT

This study looked at teacher efficacy and implementation of Competency Based Assessment in Western Kenya. The study was conducted in Trans-Nzoia, Bungoma and Busia Counties. It was grounded on Stafflebeam's CIPP model targeting head-teachers and their respective grade 6 science and technology teachers. Mixed methods research design was used. Cluster sampling technique was used in coming up with the three counties. Stratified sampling was used to categorize the school into two groups, 1,653 public and 768 private. In each of the two strata, simple random sampling was used to choose on 246 participating schools, 167 public and 79 private. Simple random sampling was also used in selecting participating teachers in schools with two or more science and technology teachers teaching in grade 6. Three data collection instruments were employed, that is: questionnaire for grade 6 science and technology teachers; interview guide for head-teachers and document analysis guide to get Grade 6 pupils' science and technology Kenya Primary School Education Assessment (KEPSEA) school means. It was analyzed using Pearson's correlation so as to establish the linear relationship between teacher efficacy and CBA implementation. The coefficient of determination (r^2) between teacher efficacy and implementation of CBA was also calculated. The study established a positive moderate correlation between teacher efficacy and implementation of CBA r (244) =.61**, p=.001. The coefficient of determination (r^2) between teacher efficacy and implementation of CBA, r^2 =.3738 was calculated, the results (37.38) implying that 37.38% of the variance in CBA implementation can be explained by teacher efficacy. The study recommended the government through the ministry of education to organize and facilitate more CBC training to help teachers familiarize with CBA to enhance their assessment efficacy. Teachers on the other hand should engage in professional development opportunities organized by the government and actively attend workshops that provide them with necessary knowledge and strategies to effectively integrate CBA into their teaching practices. This study contributes to a deeper understanding of teacher efficacy and implementation of CBA in Kenyan context, which can inform efforts to improve assessment practices.

Key Words: Competency Based Curriculum, Competency Based Assessment, Assessment Tools, Assessment Types, Teacher Efficacy

INTRODUCTION

The change from the 8.4.4 content based curriculum to 2.6.3.3.3 Competency Based Curriculum (CBC) in Kenya in 2017 called for a paradigm shift in assessing of learners from traditional assessment methods to Competency Based Assessment (CBA) types and tools. Kenya National Examinational Council (KNEC) describes these assessment types and tools as purposeful systematic continuous process of gathering information from multiple sources for making decisions on what learners know, need to learn, have learned and can do (KNEC, 2021). With the aim to facilitate learners' acquisition of competencies, KNEC recommends utilization of CBA types (diagnostic, formative and summative) and tools. Among the KNEC recommended assessment tools are: rubric, observation schedules, written tests, learners' profile, rating scales, oral questioning, anecdotal records, journal, projects, portfolio, checklists and questionnaires.

For effective implementation of CBC, teachers need to have greater sense of self-efficacy belief and more willing to experiment with these new constructivist assessment types and tools to meet expected students' competencies outlined in the new curriculum. As noted by Tschanne and Hoy (2001), sense of efficacy in a teacher has a strong positive impact on learners' performance, and if CBA implementation is done rightly, so will be students' achievement of set competencies in CBC.

Allinder (1994) as quoted by Andrian et al (2020) outlines several ways that can be achieved through teachers' self-efficacy beliefs. He noted that teachers with high self-efficacy beliefs are more likely than teachers with low sense of self-efficacy to implement educational improvements in the classroom, to utilize classroom management approaches and adequate teaching methods, to encourage students' self-sufficiency and to take responsibility for students with special learning needs. On the same note, Chacón (2005) in his study on teachers' perceived efficacy among English as a foreign language teachers in middle schools in Venezuela, reiterated that teachers' self-efficacy enables them to manage classroom problems and keep students on task, thus effective implementation of the curriculum. It is therefore important to note that for successful implementation of CBC, teachers need to utilize CBA types and tools appropriately.

With the change of the curriculum to CBC, Kenya National Examinations Council developed a Competency Based Assessment Framework (CBAF) where learners are to be evaluated using CBA types and tools. In that regard, teachers have been attending CBC trainings across the country to help equip them with necessary pedagogical skills and techniques in teaching and evaluating learners. However, more trainings need to be organized to help improve on the belief that teachers hold about their ability to evaluate learners using CBA. This is because available reports indicate that not all teachers feel well prepared to handle the new curriculum. For instance, the economic survey released in 2021 indicated that only two out of ten teachers had acquired requisite qualifications for teaching CBC (Muchungu, 2021). Momanyi and Rop (2019) also indicated in their study that only 3% of teachers feel adequately prepared for the new curriculum. On the same note, teachers themselves in 2019 through their union, Kenya National Union of Teachers released a report indicating that they were ill-prepared and poorly trained to deliver CBC (Wainaina, 2019).

Although teachers across the country have been undertaking trainings, the above sentiments could impact negatively on their efficacy on CBA, an assessment approach which focuses on assessing learners based on their mastery of the seven CBC specified competencies (KICD, 2017). For instance, Waweru (2018) in his study to investigate the extent to which lower primary school teachers were trained to implement CBC in Nyandarua North Sub-county in Kenya reported that, 50% of teachers experienced challenges in designing and using assessment rubric. On the same note, Ondimu (2018) in his study as quoted by Isaboke (2021) to establish teachers' readiness to implement CBC in private pre-schools in Dagoretti North, Nairobi County established that majority of pre-primary school teachers in public pre-primary schools lack adequate knowledge and skills on assessing learners. This was echoed by Isaboke (2021) in her study on teacher preparedness and implementation of the Competency Based Curriculum in public pre-primary Schools in Nairobi City County, who found that even teachers who were trained on CBC had challenges conducting assessments. She also established that 46.7% and 37.9% of untrained teachers on CBC had difficulties conducting both formative and summative assessments respectively even with support.

Similarly, a study by Mutiso and Odhiambo (2022) on teachers' preparedness in implementation of alternative assessment in primary schools within CBE system in Kenya, showed that teachers' preparation was below average. They concluded that primary school teachers perceive themselves to be inefficient on alternative assessment tools.

These findings compelled the need for this study to look at teacher efficacy and implementation of CBA. Whether teachers' ability, capacity and confidence to assess learners in CBC using recommended assessment types and tools has a relationship with CBA implementation or not could only be determined through formative curriculum evaluation. According to Tyler (1949), which aspects of a curriculum are effective and which aspects of a curriculum need to be improved can only be determined through evaluation. Although CBC implementation is still in its initial stages, Gredler (1996) opined that curriculum evaluation may be carried out at any stage of the process of curriculum development. This study therefore examined teacher efficacy and implementation of CBA in Grade 6 in Western Kenya.

Statement of the Problem

The change of the curriculum to Competency Based Curriculum (CBC) in Kenya in 2017 was meant to improve the curriculum to focus on competencies acquisition rather than content. Consequently, teachers are expected to change the way they evaluate learners from traditional assessments to authentic assessment using Competency Based Assessment (CBA) types and tools. Nevertheless, CBA implementation in the country seem to have its share of challenges despite the fact that teachers are undertaking CBC trainings across the country at the cost of the government, to help equip them with new evaluation skills in CBA. Available reports indicate that all is not well regarding CBA implementation, to an extent that even some teachers and parents want KNEC to scrap CBA grading system, claiming that many of them still struggle to understand it (Mutembei et al., 2024). Teachers' lack of understanding of the new curriculum (Amunga et al., 2020) and whether they are equipped with requisite skills, knowledge and competency to handle CBC have also been raised. These concerns informed the need for this study to determine the relationship between teacher efficacy and implementation of CBA. This was necessary considering that change of the curriculum to CBC expects teachers to assess learners using CBA, given that CBA provides opportunity for students to demonstrate competencies they have mastered, without which, CBC implementation will be in vain.

Theoretical Framework

This study was guided by Stufflebeam's Context Input Process Product (CIPP) evaluation model. This model began after the realization that traditional approaches to evaluation were limited and at times, too rigid for evaluating dynamic contexts (Stufflebeam, 2003). This study looked at implementation of CBA in Western Kenya. Context evaluation entailed the environment in which CBA is implemented, specifically the number of learners in class on average and the educational environment in the three Counties. These Counties were considered for this study due to the challenges some students who school in them experience during their academic journey (Rasto, 2015; Adongo, 2015). Input evaluation was used to determine teacher efficacy in utilization of assessment tools and types. Through process evaluation, the study looked at the process of assessing learners, putting in mind the two types of assessment; diagnostic and formative and utilization of assessment tools as recommended by KNEC in line with CBAF. Finally, product evaluation was employed to check on how implementation of CBA is influenced by context, input and process there above. Specifically, this paper looked at the relationship between teacher efficacy (input evaluation), one of CIPP variable and implementation of CBA (product evaluation).

METHODOLOGY

The research design that was used in this study is mixed methods research design. The study was conducted in three Counties in Western Kenya; Trans-Nzoia, Bungoma and Busia Counties. The study targeted primary schools head-teachers with their respective grade 6 science and technology teachers from 2,421 primary schools in the counties. Cluster sampling technique was used to get the Counties. Stratified sampling was used to put schools into their two distinct categories, public and private. In each school category, simple random sampling was used to choose on 246 participating schools, 167 public and 79 private. The sample size was calculated where a desired minimum percentage of 10% in each County, for each school category was used (Mugenda & Mugenda, 2003). For schools with more than one science and technology teacher, simple random sampling was used to choose on one. Each head teacher from the selected school was interviewed. Data was collected through three data collection instruments, which are: questionnaire for grade 6 science and technology teachers; interview guide for head-teachers and document analysis guide to get Grade 6 pupils' science and technology Kenya Primary School Education Assessment (KEPSEA) school means. Collected data was analyzed using Pearson's correlation so as to establish the linear relationship between teacher efficacy and CBA implementation. The coefficient of determination (r^2) between teacher efficacy and implementation of CBA was also calculated to determine the strength and direction of linear relationship between teacher efficacy and implementation of CBA (Turney, 2023).

RESULTS AND DISCUSSIONS

This study aimed at examining the relationship between teacher efficacy and implementation of CBA in Grade 6 in selected schools in Western Kenya. Table 1 shows frequencies and percentages of teachers in using Competency Based Assessment types and tools, followed by interpretation of the findings.

Table 1: Teacher Efficacy in Using Competency Based Assessment Types and Tools

Teacher Efficacy in Using Competency Based Assessment Types and Tools	Strongly Agree		Agree		At Time		Disagree		Strongly Disagree	
	FQ	%	FQ	%	FQ	%	FQ	%	FQ	%
I am able to determine the level of acquired competencies in learners using CBA types and tools.	101	41.06	73	29.67	67	27.24	5	2.03	0	0.00
I am able to provide feedback to the learners and other stakeholders using CBA types and tools.	89	36.18	83	33.74	66	26.83	8	3.25	0	0.00
I am able to inform improvement on instruction strength using CBA types and tools	85	34.55	69	28.05	86	34.96	6	2.44	0	0.00
I feel I have the necessary knowledge and skills to evaluate learners using CBA types and tools	93	37.80	79	32.11	70	28.46	4	1.63	0	0.00
I always assess learners using CBA types and tools as is expected.	67	27.24	72	29.27	99	40.24	8	3.25	0	0.00
I feel competent enough in using CBA types and tools	75	30.49	97	39.43	62	25.20	10	4.07	2	0.81
I am confident in my capacity to use CBA types and tools	83	33.74	89	36.18	15	6.10	59	23.98	0	0.00

Source: Field Data 2024

In regard to teachers determining the level of acquired competencies using CBA types and tools, findings in Table 1 show the highest number of respondents 101 (41.06%) strongly agreed that they are confident in their abilities to assess gained skills in learners, employing Competency Based Assessment types and tools as required. No teacher strongly disagreed. This implies that majority of teachers feel they have necessary ability to determine acquired competencies in learners using Competency Based Assessments.

On teacher efficacy to provide feedbacks to learners and other stakeholders using CBA types and tools in CBA, 89 (36.18%) teachers strongly agreed that they can offer learners feedbacks by utilizing Competency Based Assessment techniques with none disagreeing. This suggests that majority of teachers believe they are in position to provide feedback using Competency Based Assessment.

In respect to teachers' ability to inform improvement on instruction strength using Competency Based Assessment types and tools, 86 (34.96%) teachers responded that they only do so at times. This findings indicate

that although teachers are aware of CBA types and tools, they only inform improvement on instruction strength using CBA types and tools intermittently.

Findings in table 1 also show that 93 (37.80%) respondents strongly felt that they have the expertise and ability to assess students utilizing CBA. These findings suggest that most teachers have necessary knowledge and skills to evaluate learners using CBA types and tools.

In addition, Table 1 findings show that 99 (40.24%) teachers indicated that they at time use CBA tools and types to assess learners as expected. The implication is that, although teachers feel that they can use CBA tools and types, they only use all CBA types and tools to some extent.

On whether teachers are competent in using CBA types and tools, 97 (39.43%) grade 6 science and technology teachers agreed that they feel they are competent in utilizing diagnostic and formative assessments types together with CBA assessment tools. The implication is that a good number of teachers are competent enough in using CBA types and tools.

Lastly, 89 (36.18%) teachers were confident in their capacity as grade 6 science and technology teachers to apply CBA tools and types. None of them strongly disagreed (0%). The implication is that the biggest number of teachers teaching science and technology in Grade 6 in Western Kenya are confident in using CBA types and tools.

While there were concerns about teachers' lack of understanding of the new curriculum (Amunga et al., 2020) and whether they have requisite skills, knowledge and competency to handle CBC as opined by Muchungu (2021), findings in Table 1 provide a generally good standpoint on teacher efficacy in utilizing Competency Based Assessment tools and types. This can be attributed to teachers' experience gained in CBC trainings that have been going on for the last seven years as at 2023 since its introduction in 2017.

Table 2 provides data on teacher efficacy mean for two school categories: public and private. The data includes information on mean and standard deviations. It generally relates to the confidence or ability that teachers in public and private schools have in using CBA types and tools in assessing learners, providing feedback, and informing instructional improvements.

Table 2: Teacher Efficacy Means in Public and Private Schools

School Category		I am able to determine the level of acquired competencies in learners using CBA types and tools.	I am able to provide feedback to learners and other stakeholders using CBA types and tools.	I am able to inform improvement on instruction strength using CBA types and tools	I feel I have the necessary knowledge and skills to evaluate learners using CBA types and tools	I always assess learners using CBA types and tools as is expected.	I feel competent enough in using CBA types and tools	I am confident in my capacity to use CBA types and tools
Public	Mean	3.7485	3.6707	3.6048	3.7305	3.4012	3.5808	3.3593
	Std. Dev	.81933	.80243	.82109	.80238	.67717	.80906	1.12057
	N	167	167	167	167	167	167	167
Private	Mean	4.8354	4.7848	4.6709	4.7595	4.6582	4.7215	4.7215

	Std. Dev	.37315	.41358	.52432	.43012	.59670	.451 12	.45112
	N	79	79	79	79	79	79	79
Avera ge	Mean	4.0976	4.0285	3.9472	4.0610	3.8049	3.94 72	3.7967
	Std. Dev	.87051	.87319	.89057	.85257	.87746	.890 57	1.14969
	N	246	246	246	246	246	246	246

Source: Field Data 2024

Legend: 4.20-5.00 (Very High), 3.40-4.19 (High), 2.60-3.39 (Moderate), 1.80-2.59 (Low), 1.00-1.79 (Very Low)

Findings in Table 2 show that public schools mean was moderate, M 3.5851 (SD 0.8360). This suggests that, to some extent, teachers in public primary schools perceive themselves as efficacious in using CBA types and tools. They feel they are capable of evaluating learners, providing feedback, and using CBA tools to inform instructional improvements to some extent. These findings are contrary to those of Ondimu (2018). Ondimu in his study to establish teachers' readiness to implement CBC in pre-schools in Dagoretti North, Nairobi County as quoted by Isaboke (2021), established that majority of pre-primary school teachers in public pre-primary schools lacked adequate knowledge and skills on assessing learners. The difference in the findings can be attributed to the experience teachers have acquired over time in their interaction with these new constructivist assessment types and tools for the last seven years.

In contrast, private schools exhibited a higher mean, M 4.7360 (SD 0.4629) as compared to public primary schools. The implication is that teachers in private primary schools perceive themselves as highly efficacious in using CBA types and tools as compared to those teaching in public primary schools. They feel efficacious in determining the level of acquired competencies, providing feedback, informing improvement on instruction strength using CBA types and tools. Similar findings were observed by Isaboke (2021). In her study on 'Teacher Preparedness and Implementation of Competency Based Curriculum in Public Pre-Primary Schools in Nairobi City County,' she established that even teachers in public primary schools who hard trained in CBC had challenges conducting assessments.

Considering the two school categories, the aggregate mean was moderate, M 3.9547 (SD 0.9149). This suggests that, to some extent, teachers are efficacious in using CBA types and tools for assessing learners, providing feedback, identify learners' weak point and plan remedies and informing instructional improvements.

Head teachers were also in agreement with science and technology teachers teaching in the schools they head. Most of them confirmed in interview guide that their teachers are able and effective in competency based assessment. While responding to interview schedule, one of them had this to say:

I know the issues affecting competency based assessments are not to do with my teachers' inability in using these new assessments, I believe my teachers are well knowledgeable and able to handle CBA tools and types if we had ideal CBC learning environment (H/T54).

These findings were different to those of Jimola & Ofodu (2019). They noted that some teachers don't understand what is involved in assessment types like diagnostic, consequently, affecting their confidence in using this assessment type. They revealed that some English language teachers in their study in senior secondary school in Ado-Ekiti, Nigeria, do not have sufficient knowledge of what diagnostic assessment entails nor the reasons for conducting it.

Finally, this study sort to examine the relationship between teacher efficacy and implementation of CBA in Grade 6 in selected schools in Western Kenya. The findings for correlation coefficient are presented in Table 3.

Table 3: Relationship between Teacher Efficacy and CBA Implementation

Teacher Efficacy	**Pearson Correlation (r)**	**P-value**
I am able to determine the level of acquired competencies in learners using CBA types & tools.	.606**	.001
I am able to provide feedback to the learners and other stakeholders using CBA types and tools.	.595**	.001
I am able to inform improvement on instruction strength using CBA types and tools	.593**	.001
I feel I have the necessary knowledge and skills to evaluate learners using CBA types and tools	.585**	.001
I always assess learners using CBA types and tools as is expected.	.676**	.001
I feel competent enough in using CBA types and tools	.625**	.001
I am confident in my capacity to use CBA types and tools	.600**	.001
Average	**0.6114**	**.001**

Source: Field Data 2024 Significant at 5%

The findings in Table 3 show a statistically significant relationship between teacher efficacy and implementation of CBA where r (244) =.61**, p=.001. This implies that there is a moderate association between teacher efficacy and implementation of CBA in selected schools in Western Kenya, meaning the more efficacious science and technology teachers are in CBA types and tools utilization, the better CBA is implemented. This was echoed by Cerit (2013) who reiterated that successful curriculum implementation is related to teachers' self-efficacy beliefs. The coefficient of determination was also computed and found to be r^2 = .3738. The implication is 37.38% variance in implementation of CBA can be explained by teacher efficacy. The practical implication is that learners' competencies acquisition are equally influenced by teacher efficacy. These findings are in agreement with Inceçay and Dollar (2013) who in their study on classroom management, self-efficacy and readiness of Turkish English teacher, argued that greater self-efficacy and greater efficiency of teachers leads to better students' performance. Allinder (1994) as quoted by Andrian et al (2020) also retaliated that teachers with high self-efficacy beliefs are more likely to meet the curriculum objectives.

Furthermore, Andrian et al (2020) in their study on mediating roles of the cooperating teachers' self-efficacy to the pre-service teachers' classroom instruction and evaluation, showed a significant correlation between the level of teachers' self-efficacy and the level of performance and concluded that the higher the level of teachers' self-efficacy, the more favorable curriculum implementation will be observed.

CONCLUSION

This study looked at the relationship between teacher efficacy and implementation of CBA in Grade 6 in selected schools in Western Kenya. It was concluded that Grade 6 science and technology teachers in Western Kenya are efficacious to some extent in utilization of Competency Based Assessment. It was also concluded that there is a moderate direct relationship between teacher efficacy and implementation of CBA in Grade 6 in selected school

in Western Kenya, with 37.38% variance in implementation of CBA being explained by teacher efficacy. Consequently, it was concluded that 37.38% of learners' acquisition of competencies envisaged by Kenya Institute of Curriculum Development are equally influenced by teacher efficacy. The limitation to these findings is only 10.16% of schools in Western Kenya were considered for the study.

RECOMMENDATIONS

The study recommended the government through the ministry of education to organize and facilitate more CBC training to help teachers familiarize with CBA to enhance their efficacy. Teachers on the other hand are advised to actively engage in professional development opportunities organized by the government, which are specifically designed to enhance their skills in effective utilization of CBA tools and types. They should seek out and attend workshops that provide them with necessary knowledge and strategies to effectively integrate CBA into their teaching practices. Given that 37.38% of variance in implementation of CBA is explained by teacher efficacy, a study should be done to determine factors influencing the remaining percentage.

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