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RESEARCH ARTICLE

TEACHER PARTICIPATION IN COLLABORATIVE PROFESSIONAL DEVELOPMENT AND LEARNERS' ACHIEVEMENT IN KENYA

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Abstract

Teacher Professional Development is a key component of educational reforms across the world with a view to improve teacher effectiveness and learner outcomes. Focus is shifting to collaborative teacher activities to improve learner outcomes. However, the effect of teacher participation in collaborative activities needs to be investigated due to persistent low learner outcomes in Kenya. The study adopted convergent parallel mixed methods approach design. A sample of 194 teachers in 68 public and private primary schools was selected using stratified random and purposive sampling. Twenty head teachers were purposively sampled. Data collection instruments were questionnaires, focus group discussion guide and semi structured interview guide. Data were analyzed using descriptive and inferential statistics. The study established that teachers engaged in collaborative activities like sharing knowledge, peer coaching, lesson observation and team teaching. However, activities were top down lacking collegial approach. Teacher assistance in integrating technology was minimal due to inadequate ICT infrastructure, lack of skills among teachers and constraints in the time schedule. The study recommended stakeholders' support for variety of continuous collaborative professional development activities, improvement of ICT infrastructure and teacher capacity building for improved learning outcomes in this digital era.

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Introduction:-

Institutional based activities for teacher professional development are critical for teacher career growth and enhancing learners' achievement. Desimone (2009) identified collective participation as one of the key characteristics in effective teacher professional development. Her conceptual model holds that active leaning is related to the effectiveness of professional development. Collective participation refers to the extent to which a number of teachers from one school participate in similar learning opportunities (Hochberg and Desimone (2010). However, Fullan (2007) observes that teachers were often engaged in one day workshops that are not effective as they were removed from their daily work. Educational reforms are shifting from competitive to collaborative activities with teachers as active learners.

Modern educational organizations operate on basis of teamwork as teachers interact to build the organizational knowledge base to achieve set objectives and exchange ideas on emerging practices to boost learning outcomes. According to the 2008 Teaching and Learning International Survey (TALIS) from the OECD, the concept of a school

as a learning organization is gaining popularity in education. Teachers who apply varied teaching practices and who are actively involved in professional learning communities have higher self-efficacy. These teachers receive more feedback and appraisal on their instruction and are more involved in professional development activities outside of schools. However, the correlations and effects of these aspects are not clear. Desimone, Porter, Garet, Yoon, & Birman (2002) found that professional development where teachers from the same school participated in collective learning was effective in changing teachers' classroom practices.

Cordingley, Bell, Evans, & Firth, (2005) in a systematic review of seventeen studies of collaborative and sustained continuing professional development (CPD) in various contexts, found that collaborative professional development activities, brought about improvement in pupils' learning and behaviour, teaching practices, attitudes and beliefs. On the other hand, Saxe, Gearhart, and Nasir (2001) found that providing teachers time to collaborate and reflect did not have as strong an effect on student learning in math as collaboration that focused on teachers' content knowledge. According to Wayne, Garet, Brown, Rickles, Song, Manzeske, (2016) frequent collaborative classroom observations and feedback can lead to teacher efficacy and learner achievement.

O'sullivan (2011) notes that traditional ways of measuring impact of teacher professional development focused on teacher satisfaction and ignored impact on teacher learning, use of new practices, pupils' outcomes and/or value for money. The persistent low achievement in national examination at the primary level in Kenyan schools prompted the investigation into the effect of teacher participation in collaborative activities on learner achievement.

Statement of the problem

Collaborative teacher professional development approaches have been adopted by many countries across the world as a key component of educational reforms to improve teacher quality and learner achievement. Despite teacher engagement in professional development activities low learner achievement in national examination at primary school continues to be witnessed (EFA, Global monitoring Report (2013/14). In Kenya, teachers have been found to continuously engage in different forms of professional development activities. However, the effect of teacher participation in collaborative activities on learner achievement is not commensurate as manifested in low learners' achievement in primary schools.

Literature Review: -

Collaboration, shared inquiry and learning from and with peers are paramount aspects of professional development. Learning through colleagues is seen as a foundation for career growth. Ma (2010) opines that collaborative on-going teacher learning through participation in professional communities of inquiry is a means for successful and empowering teacher learning. These professional learning communities comprise groups of teachers that are formed with the aim of sharing and critically interrogating their practice. This should be done in a continuous, reflective, collaborative, inclusive, learning-oriented, and growth-promoting manner in order to enhance teacher and student learning.

Knowledge sharing among teachers enhances cooperation and professional growth. Mawhiney (2010) opines that teachers find sharing of other teachers' knowledge as useful means of learning. However, Little, Gearhart, Curry, & Kafka (2003) observed that schools may not yet have utilized the potential of knowledge sharing among teachers. Darling-Hammond, Holtzman, Gatlin, & Heilig (2005) note that when teachers share on what good teaching entails they help set conducive learning environment and apply the learnt strategies. As teachers carry out activities and share their experience with colleagues, they get opportunities to learn new strategies (Lieberman and Mace, 2008). The feedback from colleagues and facilitators, provide opportunities for teachers to critique their practice through reflection. This study addressed the issue of how teachers share knowledge and skills acquired from such professional engagement.

Collaborative learning and peer-assisted learning are often identified as effective practices in different setting (Feiman-Nemser 2001). Peer coaching is beneficial in providing opportunity for collaboration, evaluating teacher effectiveness, and improving teacher quality (Marshall 2005). Briton and Anderson (2010) examined the effectiveness of peer coaching on the teaching practices of pre-service teacher interns in high schools in the US. The study sought to find out if teacher intern practices were altered and/or affirmed by participating in peer coaching exercises. The study using 1900 racially and economically diverse students in grades 9–12 found that peer coaching helped change teachers' teaching practices. The study therefore recommended the addition of peer coaching as a

requirement in the pre-service teacher-training process. Joyce and Showers (2002) also notes that when teachers engaged in peer coaching there was increased practice and transfer of new knowledge and skills.

Collaborative teacher professional development activities are effective means of enhancing teacher effectiveness and learner achievement through improved teaching strategies and relations among teachers and learners. Hagen and Nyen (2009), show that good teachers assume responsibility for their professional development even as they engage in co-operating with other teachers. Levine and Marcus (2010) conclude that different forms of cooperative activities should be planned to promote learning in various areas. Meirink, Meijer, Verloop, & Bergen (2009) in a study of 34 secondary teachers in Netherlands found that teachers learn at their workplace by trying out various teaching methods after having observed how a colleague teaches or after reflection on teaching together with colleagues improve. However, it is important to note that there is no single professional development strategy that will always work in every school, for every teacher, all of the time. There is need therefore to customize these programs to fit individual teachers' and schools' needs (Fishman, Marx, Best, & Tal, 2003). This study therefore focused on the different collaborative professional development activities teachers are engaged in and their effect on learner achievement. Darling-Hammond and McLaughlin (2011) opine that the teaching profession can be solitary as schools often fail to promote collaboration.

Research Design

The study adopted convergent parallel mixed methods research design where both quantitative and qualitative data was collected within the same phase. The design was appropriate as it gave a comprehensive view of teacher collaborative professional development activities. Stratified random sampling technique was applied in which the school categories formed strata i.e. public and private and proportional allocation was used for each stratum. A sample size of 194 class eight teachers was obtained using stratified random sampling and purposive sampling. Twenty head teachers were also purposively sampled. The total sample size was 204. Data were collected using teacher questionnaires and focus group discussion guide and head teacher semi structured interview guide. Quantitative data was analyzed using descriptive and inferential statistics while qualitative data was analyzed thematically.

Research Findings and Discussion

Teacher Participation in Collaborative activities and KCPE Achievement

This study sought to find out the level of teacher engagement in collaborative activities. Teacher collaborative activities comprised teacher sharing professional development knowledge, teacher being assisted and assisting others in difficult subject areas, lesson observation and team teaching.

Sharing of Professional Development Information among teachers

In relation to forums through which teachers shared knowledge or information acquired from professional development activities with their colleagues, the findings are presented in figure 1.

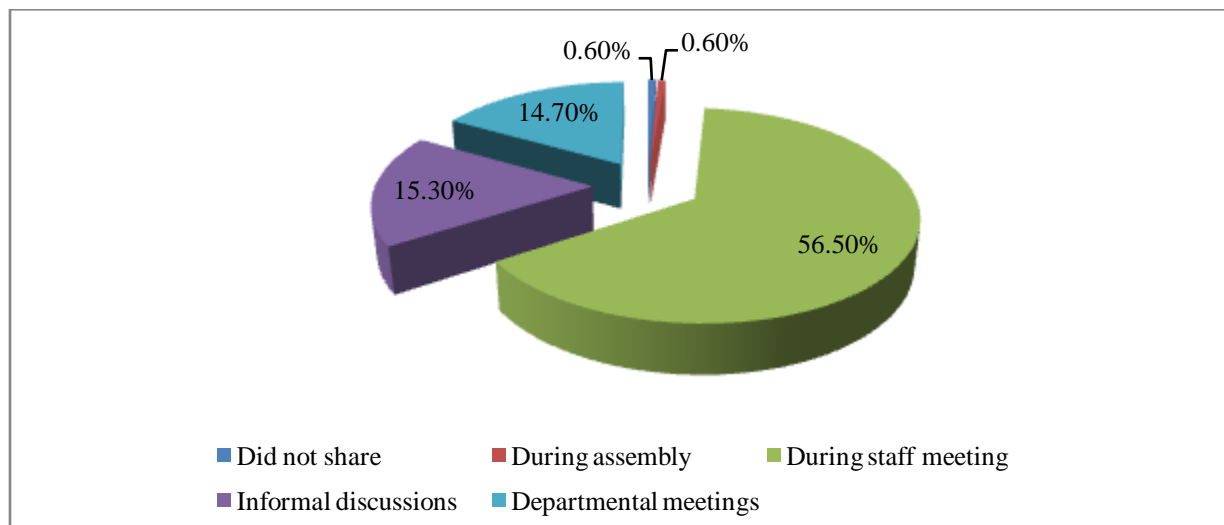


Figure 1:- Forums for sharing professional development knowledge.

Figure 1 show that teachers shared information acquired from professional development using different forums i.e. school assembly, staff meetings, departmental meetings and informal discussions. The main means through which teachers shared professional development knowledge was during staff meetings as reported by 96(56.5%) of the respondents. Slover and Rismak (2011) found that when teachers participated in knowledge sharing activities, they developed their teaching practices and expanded their knowledge. Darling-Hammond, et al (2005) opine that when teachers share on what good teaching entails they help set conducive learning environment and apply the learnt strategies. On the contrary, Little, Gearhart, Curry, & Kafka, (2003) noted that schools may not yet have utilized the potential of knowledge sharing among teachers

Teachers in upper primary confirmed seeking information from those in lower primary on digital literacy and other professional development courses. This was because the lower primary teachers had been engaged more in digital literacy activities compared to those in upper primary. This was a comment as reported by one teacher:

Through constant sharing a teacher is able to retain and understand better the knowledge acquired from the professional programs therefore improving performance of pupils through discussion outside the class, in the staffroom or during our free time

Effective collaboration requires adequate time, preparation and feedback mechanisms. It was however, found out that the mode and period of sharing the information was not sufficient as it was either done during assembly or break time. Many teachers indicated that they used break time or while in the staffroom as they waited to attend the next lesson to share new knowledge. One teacher commented, “we face the challenge of sharing the written notes as our school does not have a photocopying machine and papers. Sometimes we use our own money.”

The study further established that there was inadequate follow up activities on the professional development activities and forums for sharing were not adequately provided for at the school level. One head teacher had this to say,

I give teachers a chance to share on anything new they have learnt from the courses but we do not have specific times or programs for sharing. The time to follow up and how the information is shared is not set in our school

It was revealed that head teachers provided opportunities for teachers to brief others on information they had acquired in professional development programs however, time constraints due to heavy teaching workload and teaching schedules were identified as challenges hindering effective sharing of professional development information among teachers.

Peer Coaching Activities among Teacher

Peer coaching activities in this study comprised teachers being assisted and assisting others in areas they found difficulties as far as their teaching subjects were concerned. In effort to find out if teachers were assisted by their colleagues in their teaching subjects, the findings are presented in table 1 with respect to type of school.

Table 1:- Teacher being assisted by other teachers and school type.

		Teacher being assisted by other teachers	
		Yes	No
		N %	N %
School Type	Public	91 58.7	8 53.3
	Private	64 41.2	7 46.7
Total		155 91.1	15 8.8

Table 1 shows majority 155(91.1%) of teachers reported that they were assisted by their colleagues in areas they encountered difficulties in their teaching. It is evident from these results that teachers received assistance from their colleagues in areas they found difficulties in their teaching subjects affirming the practice of peer coaching was taking place. The finding is contrary to Ampofo, (2017) who found that in senior high schools in central region, Ghana, peer coaching is not regularly practised and it is also not institutionalized. Britton and Anderson (2010) observed that peer coaching models that support teacher practices in the field are underutilised yet they established that teachers who practiced peer coaching changed their classroom practices. Tesfaw and Hofman (2014) opine that peer coaching that is school based helps enhance teachers' ability to adopt and use new teaching skills. Green (2004)

found that teachers who engaged in peer coaching were more effective in the use of new instructional strategies compared to those who did not. However, Murray, Xin Ma, & Mazur (2009) found no association between peer coaching and student improvement in mathematics.

Referring to areas in which teachers were assisted by their colleagues, the results are presented as shown in figure 2.

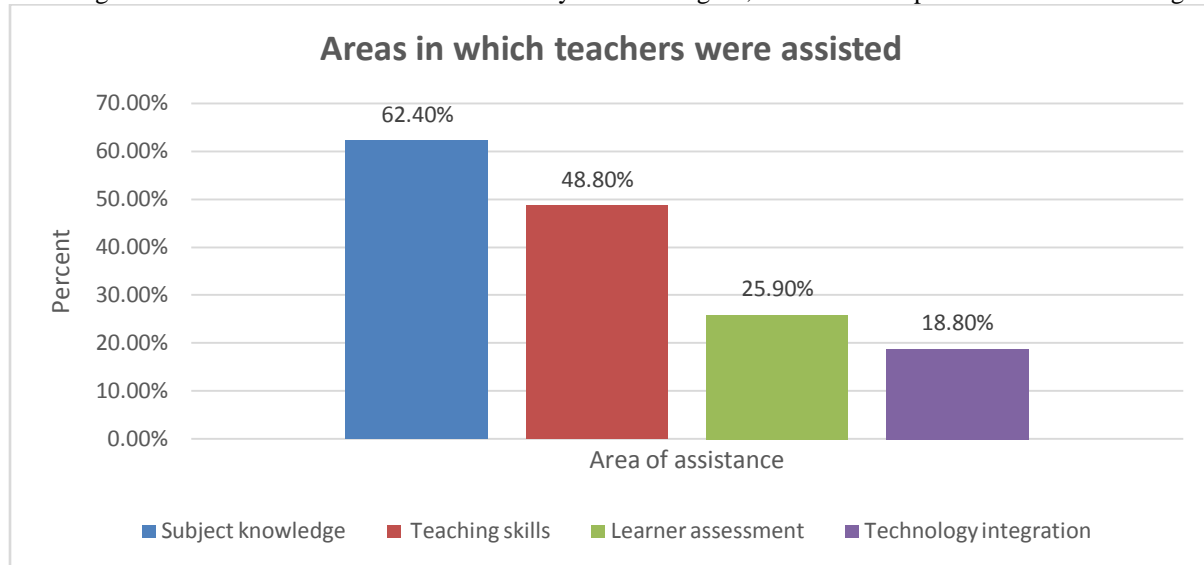


Figure 2:- Areas in which teachers were assisted by other teachers.

Figure 2 shows that majority 106(62.4%) of the teachers were assisted to improve their subject content knowledge. However, the results indicate there was limited assistance in integration of technology in teaching. The Ministry of Education through the quality education dialogues (2018) reported that teachers in primary schools lack requisite skills hence the low ICT integration in learning. We are in the digital era and teachers are expected to integrate technology in the teaching and learning processes. It was found out that heavy teaching workload, limited technology infrastructure in schools and inadequate ICT skills among teachers adversely affected teacher assistance in ICT integration.

One public school teacher commented; “My school does not have a computer so we don’t share knowledge on how to use computer in teaching.”

The interviewed head teachers reported that teachers assisted one another in their teaching subjects but the use of technology in teaching was a challenge. A head teacher from a public school had this to say:

Teachers do not help one another to use technology in the class because like in my school we don’t have a computer and electricity is only connected to the office.

In public schools, head teachers noted that the lower primary teachers were trained in digital literacy but those in upper primary did not have the capacity. Most schools had electricity but this was only connected to the office due to limited finances.

In my school we have connected electricity to my office, the secretary and the staffroom. This is because we do not have money to connect to the classrooms. We are also struggle to pay the electricity bills. Teachers do not therefore use technology a lot in teaching.

Integration of ICT in teaching and learning is vital as digital literacy is one of the core competencies in the Competency Based Curriculum rolled out in Kenya in 2017. However, infrastructure to support ICT and capacity building for teachers to must be given priority if ICT integration is to succeed.

The study further sought to establish whether teachers assisted each other in their teaching subjects. The findings are shown in table 2.

Table 2:- Teacher assisting others and school type.

			teacher assisting other teachers	
			Yes	No
			N %	N %
School Type	Public		86 59.9	13 48.1
	Private		57 40.1	14 51.9
Total			142 83.5	27 4.1

Table 2 shows that majority 142(83.5%) of teachers assisted others in areas of difficulty with only 27(4.1) indicating they had not assisted others. The finding shows that those who offered assistance (86.9%) were less compared to who received assistance (91.6%). This reveals that peer coaching was one sided as more teachers did not believe they had the ability to assist others, and therefore did not assist their colleagues. There is need therefore to create awareness on the value of collaboration among teachers and enhance the capacity of all teachers for knowledge to circulate depending on their expertise. However, challenges of time limitations, heavy teaching workloads and limited skills affected collaboration efforts negatively.

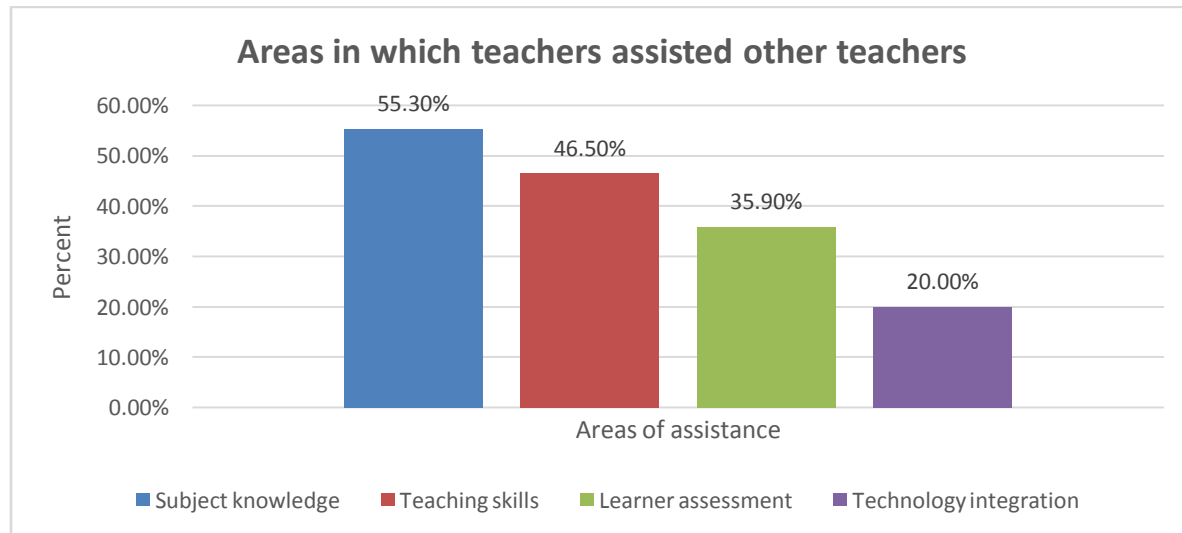
**Figure 3:-** Areas in which teachers assisted others.

Figure 3 shows that 94(55.3%) of the teachers indicated they assisted their colleagues to enhance their subject matter. However, those who assisted their colleagues in the use of technology were only 34(20.0%). According to OECD (2005) teachers reported a need to be trained in Information Communication Technology skills in teaching.

Technology plays a critical role in teaching and learning in this 21st century and teachers require to be well versed in integration of technology in the classroom. The study however, points to the fact that majority of the teachers were limited in their capacity to integrate technology in the classroom. This was confirmed by the head teachers who noted that even in private schools that had computers, technology integration in teaching was still lacking. One private school head teacher reported, 'we have a computer room here in the school but I don't see the class eight teachers using it to teach or help each other in teaching using the computers.' This supports the report by the Ministry of Education in 2016 that only 31.9% of pupils in class 3 had been exposed to computers. Digital literacy is one of the competences necessary for teachers and learners in this digital age.

Lesson Observation:-

The study sought to find out the number of times teachers had been observed by their colleague teachers while teaching in the last two terms.

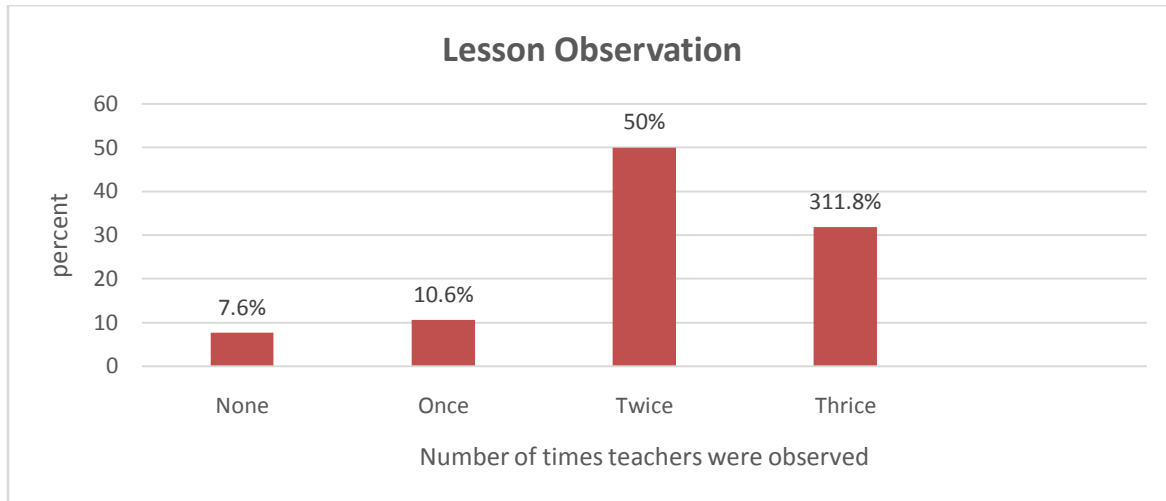


Figure 4:- Number of times teachers have been observed during lessons.

Figure 4 indicates that majority 157(98.4%) of the teachers were observed while teaching by their colleagues. This finding indicates that teachers were adhering to the TSC policy on lesson observation. This study finding concurs with Piper & Mugenda (2012) who established that Kenyan teachers reported being observed at least once a term. Whitehurst, Chingos, & Lindquist (2014) established that the more frequent the observations, the more effective teachers became, as observation provided reliable data. Zwart, Wubbels, Bolhuis, & Bergen (2008) established that the greatest number of changes in teaching practice is achieved when teachers observe each other and give feedback on the observed practice.

Lesson observation has been found to be an effective collaborative professional development strategy. In this regard teachers in public schools were observed during lessons by either the deputy head teacher or the senior teacher. However, in many schools this was done as a formality to fulfil the requirement by the teacher employer for each teacher to be observed at least once a term. Teacher lesson observation in private schools was done by the school manager or proprietor and in most cases without prior knowledge. Teachers did not link lesson observation to learners' achievement but rather as form of inspection school administrators and they expressed discomfort teaching while the head teacher is in class. In some cases, there was bias where if relationship with the school administrators was not cordial teachers received low ratings on classroom observation. Dynarski (2016) notes that too often observers pay more attention on the teacher personality instead of evaluating teacher performance and its impact on students' learning.

The study further investigated the number of times teachers had observed their colleagues during lessons in the last two terms.

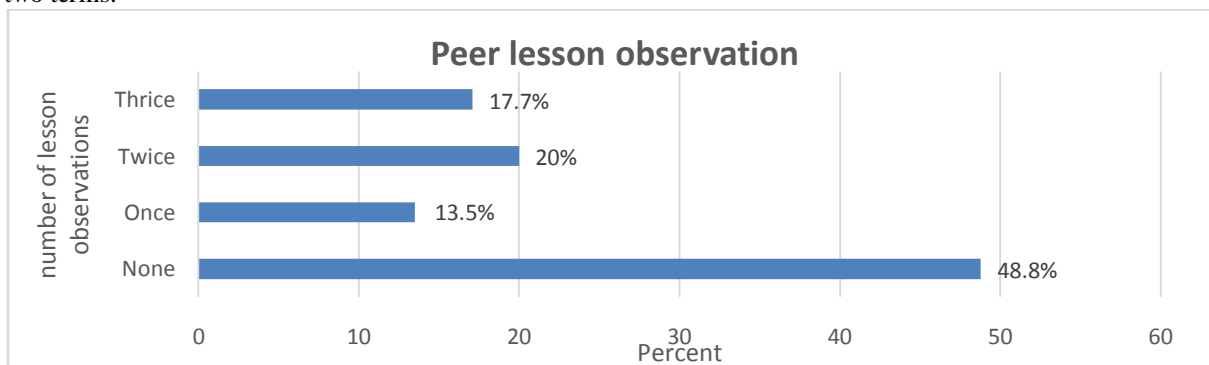


Figure 5:- Number of times teacher observed other teachers' lessons.

Results in figure 5 indicate that majority 83(48.8%) of the teachers had not observed their colleagues teaching. Majority of the teachers had been observed more times than they themselves had observed their colleagues. This is an area of concern as all teachers in the team or subject area are supposed to observe others and be observed by their

colleagues while teaching. Peer observation helps improve practice for those being observed and those observing others. It was established that most of the lesson observations were done by those in administrative positions e.g. deputy head teachers and senior teachers as outlined in the TPAD tool but peer observation was low. In fact, most teachers had the view that lesson observation is the work of the deputy head teacher as they are paid to do that. It is however, imperative to note that teachers at the same level need to plan a lesson together and observe each other while teaching.

The positive effects of peer observation cannot be overemphasized. There is need to sensitize teachers on peer observation as well as enhance their capacity on lesson observation. Meirink Meijer, Verloop, & Bergen, (2009) found that teachers learn at their workplace by testing out different teaching methods after having observed how a colleague teaches or after reflection on teaching together with colleagues.

Lesson observation as a professional development technique allows teachers to identify their areas of weakness and appoint a colleague to complement in their teaching. Data generated from the head teacher interviews established that teachers rarely practiced peer lesson observation. Reports from a baseline study by Centre for Mathematics, Science and Technology in Africa (CEMASTEA) in 2016 showed that teachers in secondary schools participated in lesson observation and schools even invited teachers from other schools to share experiences.

Team teaching promotes teacher professional development and is associated with higher learning outcomes. This study further sought to establish the number of times teachers had engaged in team teaching in the last two terms. The findings are presented in figure 6.

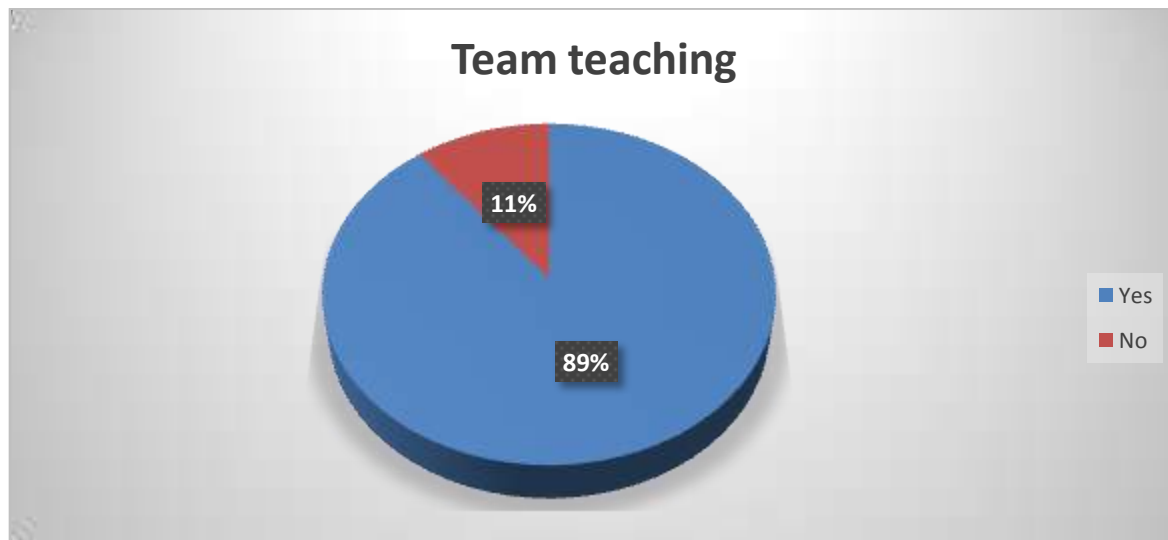


Figure 6:- Teacher engagement in team teaching.

Figure 6 reveals that majority 152 (89.4%) of the teachers engaged in team teaching. This clearly indicates that teachers shared responsibilities in teaching a class. Notably, head teacher supported this collaborative activity as it helped to ensure that all classes were taught even when a teacher was officially absent. Madhuri and Meghna (2016) on the effect of team teaching on academic achievement of 9th grade learners in science found a significant positive effect. Similarly, Nkechi, Akudolu, & Ezenwosu, (2015) observed that students taught English language comprehension by teachers who used team teaching approach, had significantly higher achievement than those in the control group who were taught by a single teacher.

Team teaching increases the interactions between teachers and learners (Wadkins, Miller and Wozniak (2006). Though teachers practised team teaching the head teachers noted that it required close monitoring as some teachers used it as an excuse to exchange lessons interfering with the teaching time table. Teachers were also reluctant to inform the head teacher when engaging in team teaching and this created confusion. One teacher from a public school said, 'teaching with colleagues requires you to plan well to ensure they do not have another class at the time you want them to teach a topic for you' others also reported that their colleagues were uncooperative and were not

willing to share teaching classes. Evidently, the emphasis on grading teachers according to examinations grades of their class was causing unhealthy competition among teachers. As a result, some teachers were possessive of their class eight learners as they wanted to be associated with the national examination results and were therefore not willing to engage in team teaching.

Effect of Teacher Collaborative activities on performance in examinations

Learners' achievement is a result of cumulative effort of teachers working together with the school administration, the learners and among them to create a favorable school climate. This study sought to establish the effect of teacher participation in peer coaching, lesson observation and team teaching on achievement in KCPE. The independent sample t-test was used to test the effect of teacher participation in collaborative activities on KCPE achievement based on the premise that collaborative activities were dichotomous i.e. those teachers who participated in these collaborative activities and those who did not and its effect on KCPE achievement was a continuous variable.

Table 3:- Group statistics for teacher participation in collaborative activities and KCPE achievement.

Group Statistics					
	Participation in collaborative activities	N	Mean	Std. Deviation	Std. Error Mean
KCPE achievement	Yes	87	57.51416	6.833644	.732644
	No	83	54.72839	5.590229	.613607

The statistic in table 3 gave a mean score of 57.51 with a standard deviation of 6.83 for a total n of 87 teachers who had participated in collaborative PD activities. Teachers who had not participated in collaborative PD activities had a mean score of 54.73 with a standard deviation of 5.59 for a total n of 83 teachers. It was observed that there was a difference in mean for teachers who had participated in collaborative PD activities and those who had not.

To test whether this difference in mean was statistically significant an independent sample t-test was carried out. The results are presented in table 4.

Table 4:- t-test for collaborative activities and KCPE achievement.

Independent Samples Test							
		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	T	df	Sig.(2tailed)	Mean Difference
KCPE achievement	Equal variances assumed	7.394	.007	2.901	168	.004	2.785764
	Equal variances not assumed			2.915	164.221	.004	2.785764

This study found that the effect of teacher participation in collaborative activities on KCPE achievement was statistically significant since the p value (0.004) was less than 0.05. This implies that participation in collaborative PD activities was a good predictor affecting KCPE achievement in Kirinyaga County. The study therefore rejected the null hypothesis that there is no statistically significant effect of teacher participation in collaborative professional development programs on KCPE achievement in Kirinyaga County. The calculated Cohen's d for teacher participation in collaborative activities and KCPE achievement was 0.447 which was a moderate effect size.

The study findings established that 87(51.17%) of teachers were engaged in different forms of collaborative activities while 81(48.8%) were involved in some. The need for teachers to collaborate on matters concerning their teaching practice cannot be over emphasized. The world has become a global village and with the advance in technology all teachers need to embrace collaborative professional development. Also these activities are cost effective and offer real time help to both teachers and learners as teachers do not have to leave their work stations.

Countries like Finland that have high quality teachers provide everyday opportunities for teachers to engage in collaborative professional development activities.

Conclusion: -

Teacher participation in collaborative activities helps improve learners' achievement. Teachers supported these activities despite the challenges of time and resources as they found them useful in helping them share and engage with their colleagues both formally and informally. Head teachers also supported collaborative activities as they created a healthy school climate that helped to mould learners' behaviour and boosted the school mean score. Majority however, noted that these activities need to be well organised and embraced by all teachers for the benefit of the learners. However, teachers were not aware of the abundant benefits that can accrue from these activities that they were formally and informally encouraged to participate in. The effective use of these collaborative activities was affected by tight teaching schedules, limited follow up, inadequate ICT infrastructure and inadequate skills in ICT among teachers.

Recommendations: -

The ministry of education to provide infrastructure and teaching learning resources required to encourage collaborative activities in schools. School administrators to organize forums that create awareness on the various collaborative activities teachers can embrace, significance of such activities among teachers for professional growth and improved learners' outcomes. Education authorities need to develop programs for building teacher capacity especially in ICT integration and provide technical support at the inception to build confidence in use of the hardware and software involved.

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