

DELIVERING QUALITY EDUCATION THROUGH INCLUSIVE TEACHER PROFESSIONAL DEVELOPMENT PEDAGOGIES IN KENYA

Theme: Innovations for Quality Education and Lifelong Learning

Sub-theme: Innovation

Strand: Equity and Inclusion

Authors: Lydia Chege¹, Samuel Juma², Fridah Kiambati³, Mutiso T. Wambua⁴

Abstract

Delivery of quality and equitable inclusive education requires innovative approaches in teacher preparation. Transition of learners with disabilities to secondary schools and their retention therein has been impaired by lack of teacher preparedness. Teacher Professional Development (TPD) requires involvement of teachers individually and collectively. There has been lack of a systematic continued capacity development of teachers to deliver quality education in inclusive setting. Kenya Institute of Special Education in collaboration with Commonwealth of Learning (COL) conducted a study to explore how inclusive teacher professional development strategies can be used as a driver of access to quality education and lifelong learning for all. The aim of the study was to explore the use of teacher communities of practice made up of teacher educators and practicing teachers as an innovative step in building teacher professional capacity in inclusive education. The study involved 39 classroom teachers, 12 head teachers and 6 policy makers in the education sector. Semi structured questionnaires were used to collect data from the respondents and data analyzed using Statistical Package for Social Sciences. The study revealed that creating a network for specialist teachers to meet and share the teaching of concepts with teachers of regular schools in secondary schools is positively correlated with enrolment of learners with learning disabilities, improved school infrastructure as well as improved subject performance among many students. It was also found that the community of teachers sharing knowledge makes teaching of abstract topics easy to teach regardless of whether the learner has a disability or not. The study concludes that: inclusive teacher professional development pedagogies are instrumental in enhancing student support and personalized learning; teachers need networks, where they link up and share on new and developing methodologies that are effective in delivering academic content to a diverse community of learners including those with disabilities.

Key Words: Teacher professional Development, Inclusive Pedagogies, Innovation

Mode of Presentation: This is a research paper that will be presented using a power point presentation. The presenter shall engage in a question and answer session with the participants after the presentation.

1 Introduction

Delivering quality and relevant education to learners as a means of preparing a solid foundation for the present and future generation is a primary concern of all governments across the globe. The sustainable development goals (SDG 4) calls for ensuring provision of quality, equitable and inclusive education, and provision of lifelong learning opportunities for all. In the past decades, access to education was seen as an enabler to poverty alleviation especially in many African countries and Southern Asia (Kalyanpur, 2008). Evidence suggest however that access to schools is not a solution in itself if the issue of participation in the learning process is not addressed.

When more and more learners are enrolled in schools, teachers require more flexible teaching approaches to cater for the needs of all. As such, continuous teacher professional development cannot be underestimated. However, in many developing counties such as Kenya there is serious lack of systematic and continuous teacher professional development that helps teachers inculcate inclusive pedagogies in the teaching process that can enable as many learners as possible to participant in the learning process (Takahashi, 2011). This lack of systematics teacher

1 Research, Linkages and Partnerships Officer, KISE

2 Research Assistant, KISE

3 COL Coordinator, KISE

4 Director, KISE

professional development stems from high poverty levels, making in-service teacher training expensive and seeking such training requires teachers to travel away from their working stations, thus becoming detached from the teaching profession in the quest to develop professionally.

This paper explores innovative teacher professional development strategies that have been implemented by Kenya Institute of Special Education (KISE) in collaboration with Commonwealth of Learning (COL) as drivers of accessing quality education and lifelong learning for all, through efficient teacher professional development and capacity building. The innovative strategies discussed in this paper is a blend of school-based teacher development and establishment of communities of practice using information technology.

2 Literature Review

2.1 Quality and Equitable Inclusive Education

For a long time, quality education is considered as an avenue to ensuring productive life to individuals. Governments across the world have to put in place strategies to address challenges to education access, retention in school, transition across different levels of education. Most of these initiatives that sought to minimize barriers to education access were based on advocacy and community sensitization and mobilization. For instance, a significant number of African cultures traditionally practiced female genital mutilation (FGM), which was a great hinderance to education access for the girl child. In response to minimize this barrier, the government would sensitize communities about the negative effect of the practice (Sayed, & Ahmed, 2015). Such efforts have to a reasonable degree yielded positive results especially with the introduction of male mentors in Kenyan communities that previously practiced FGM.

Further, the government would put in place legal provisions that encourage enrollment of learners. In 2003, the government of Kenya introduced Free Primary Education (FPE), which saw enrollment of learners at primary school level increased rapidly. The government of Kenya in recent years has put much emphasis on 100 percent transition from primary to secondary school level (Ojiambo, 2009). Consequently, there is an influx of students in secondary schools with diverse background. While it is important to have learners enrolled into a learning institution, meaningful schooling may not necessarily happen unless the question of quality, equitable and inclusive learning is addressed.

Studies have shown that even with large enrollment of learners in schools, many are not able to acquire and use basic literacy and numeracy skills. The issue of quality education is anchored on qualified teaching personnel and availability and adequacy of facilities. A competent teacher is able to facilitate the learning process in an inclusive and equitable manner (Operti & Belalcázar, 2008). Trends in inclusive education at regional and interregional levels: issues and challenges. *Prospects*, 38(1), 113-135. The current competency-based curriculum in Kenya appreciates diversity in learners, implying teachers will have to apply differentiated teaching approaches (inclusive pedagogies) which are instrumental in maximizing potential of every learner. To achieve quality, equitable and inclusive education and provide lifelong learning opportunities for all as described in the sustainable development goal 4, intensified and innovative teacher preparation is critical and urgent in Kenya.

2.2 School Based Teacher Development (SBTD)

Teacher professional development aims at equipping the teacher with up to date knowledge, skills and efficient teaching approaches of a particular subject. Teacher training programmes in Kenya prepare teachers for to deliver general classroom dynamics (Avalos, 2011). However, education reforms that take place from time to time in response to contemporary trends and other practical classroom issues may render such initial trainings insufficient. This calls for continuous teacher capacity development to enhance teacher effectiveness in handling emerging issues in the teaching profession and diversity among learners (Allen, et al., 2011).

The time taken and financial implications involved in equipping the teacher for effective teaching through continuous teacher capacity building poses a strain to both teachers and the government. The cost of most in-service teacher training programmes in Kenya are met either by the teacher themselves. In such a context where it is the teacher responsibility to meet their own cost of continuous capacity building, teachers may lack finances to pursue such training. Some researches (Duncan, 2010; Killeavy, & Moloney, 2010) have shown that attendance of teacher professional development courses does not necessarily improve learning outcome. Among the key reasons cited by these studies that make current teacher professional development approaches is lack of inclusive perspectives and less emphasis on classroom practices and more emphasis on theoretical pedagogies.

School-based teacher development (SBTD) is an innovative teacher professional development approach meant to improve teaching and learning experience. SBTD approach to teacher development enhances their access to training materials using technology (Zeichner, 2010). When teachers have access to professional training materials that improves their pedagogies with greater flexibility, teachers have more time to practice what they have learned (Xu, 2009). The core innovation in the SBTD model is improvement of teacher quality and cost reduction in access to interactive and inclusive pedagogies. Different countries in Sub-Saharan Africa have incorporated SBTD in their education reforms as an interventional in response to low learning outcomes.

2.3 Teacher Communities of Practice

The term communities of practice is a relatively recent coinage that refers to a group of individuals sharing a profession or craft. This concept was first proposed by Jean Lave 1991 and later expanded by and Etienne Wenger in 1998. The concept provides useful views and perspectives on collaborative learning and knowing. Researches indicate that professional networks formed with the aim of encouraging knowledge sharing fosters deeper understanding. Formation of communities of practice among teachers to share content and pedagogical concerns improves their efficiency in teaching (Koellner & Jacobs, 2015).

While regular teacher training programmes emphasize of subject content, communities of practice emphasizes of best practices in delivering subject content. The discourse of inclusive pedagogies form the central business in teacher communities of practice as this forum brings teacher educators, special needs education teachers and regular teachers to share their experiences in the teaching practice. Communities of practice is one among many different ways in which social constructivism, connectivism and experiential learning are integrated, illustrating the impracticality of a applying a single teaching theory in an inclusive setting.

The power of communities of practice is manifestation of informal teaching and learning in this digital era (Wenger, 2014) (*See Appendix A2 for the tools that support communities of practice*). Effective communities of practice functions optimally in the digital context where participants have access to information and share their experiences effortlessly. Though formation of professional networks through social media, teachers educators and teachers share inclusive pedagogies which when applied in the classroom context improves learning outcome of learners (Cuddapah, & Clayton, 2011).

3 The Conceptual Model for Innovative TPD Practices

We report a three-tier scalable innovative teacher professional development model. This model forms a conceptual framework on actualization of inclusive teacher professional development pedagogies and its impact on learning outcomes in secondary schools. In Kenya, teacher educators comprise of government agencies mandated to deal with education matters in the country such as the Ministry of Education (MOE), Kenya Institute of Curriculum Development (KICD), Kenya National Examinations Council (KNEC), Kenya Institute of Special Education (KISE), Teachers Service Commission (TSC), Kenya Education Management Institute (KEMI) and Center for Mathematics, Science and Technology Education in Africa (CEMASTEIA).

The proposed innovative teacher professional development model has two components; 1) Communities of practice and 2) School-Based Teacher Development (SBTD). Communities of practice is an assorted set of secondary school teachers and relevant teacher educators. The relevance that establishes formation of a community of practice is based on the link between the mandate of teacher educator agency and the pedagogical need of teachers. For instance, teachers of Mathematics and science subjects in Kenya and CEMASTEIA formed a community of practice in which Mathematics and science specific pedagogies are discussed. Additionally, institutions such as KISE formed broader networks within communities of practice due to introduction of inclusive components to the pedagogy.

The use of technology facilitated online interaction between teacher educators and secondary schools' teachers in accessing and sharing content and pedagogical issues. Participants in communities of practice interact virtually using electronic devices such mobile phones, laptops and desktop computers. This online interaction is less restrictive as participants overcome geographical barriers and have increased flexibility in terms of time, location and device required to access meaningful information. As such, school-based teacher development was made possible and teachers could concurrently have access to content and pedagogical discourse while practicing the same with their learners. As detailed in Figure 1, formation of professional networks through professional communities of practice between teacher educators and teacher in the school-based teacher development framework enhances teacher access of inclusive pedagogies leading to improved learning outcome.

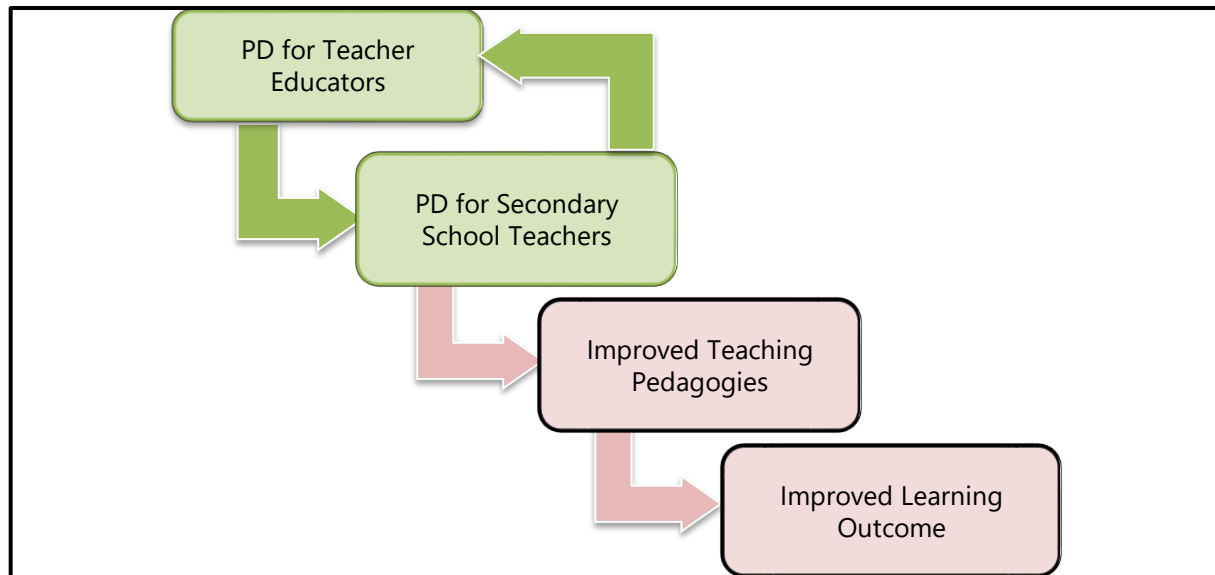


Figure 1: Innovative Teacher Professional Development Model

4 Research Design and Methodology

The study sought to explore innovative inclusive teacher professional development strategies can be used as drivers of access to quality education and lifelong learning for all. Establishment of professional communities of practice and adoption of school-based teacher development were key innovative strategies in teacher development explored. The study adopted a cross-sectional survey design targeting 48 classroom teachers and 16 head teachers from 16 secondary schools in Kenya (*See Appendix A1 for geographical location of the selected schools*). These counties were purposively selected to include vulnerable population in Kenya such as refugees, arid and semi arid regions (ASAL), poor rural areas and learners with disabilities and special educational needs. The study also targeted policy makers within the education sector as key informants of teacher education and professional development.

Kenya Institute of Special Education in collaboration with Commonwealth of Learning (COL) identified the participants. Selection of school was based on the kind of diversity it represents among the learners. The schools chosen were have learners most of vulnerable population discussed in this section. The objective was to find out what the teachers were doing to accommodate such diversities and form communities of practice for them to share inclusive pedagogies. In all schools, teachers of Mathematics, Science subject and Language were selected to participants in the study as these subjects were assumed to be fundamental in learning other subjects. Before the study, a baseline data collection on teacher's classroom practices was done. With the help from curriculum design specialists and technologists from Commonwealth of Learning, teachers and teacher educators (policy makers involved in the study) formed communities of practice under teacher future programme, a COL initiative for sustainable learning.

Communities of practice run for 16 weeks during which the inclusive education pedagogies for teaching Mathematics, Science subjects and languages were discussed by teachers and teacher educators in their various domains. After the 16-week school-based teacher development programme, data collection on the same aspects as in the baseline were collected. The impact of these innovative teacher training strategies on learning outcome was measured.

Data presented in this paper was collated from 39 teachers of Mathematics, Science subjects and Languages, 12 head teachers and 6 policy makers from MOE, KICD, KISE, TSC, KNEC and CEMASTE. Data was analyzed using statistical methods and thematic approaches, after which triangulation of quantitative and qualitative datasets from different respondents was done to complement each other and achieve documentation of rigorous and impartial research findings herein.

5 Results

The study involved 57 participants of which 39 were classroom teachers of Mathematics, Science subjects and Language of which 54 per cent were male and 46 per cent were female. There were 12 head teachers of which 58 per

cent were male and 42 per cent were female. There were 6 policy makers drawn government agencies in Kenya of which 67 per cent were male and 33 per cent female as detailed Table 2 below.

RESPONDENT	MALE	FEMALE
Teachers	54%	46%
Head Teachers	58%	42%
Policy Makers	67%	33%

The study sought to establish teacher's personal belief on teaching and learning in inclusive education. To assess this, teachers were asked to make comments about their role as facilitators of student's own inquiry, how best they believed students learn best and comparison of the importance of thinking and reasoning compared to specific curriculum content. It was found that about half of teachers changed their perception about the importance of learners' thinking and reasoning. Before engaging in SBT and communities of practice, 43% of teachers believed that specific curriculum content was more important in directing learning outcome of learners. However, after the 16-week participation in communities of practice, only 12% held onto this view while the rest (88%) reported that learners' thinking and reasoning was more important in the learning process compared to specific curriculum content. In fact, some teachers posted photos of their learners' performance before and after applying differentiated teaching approach for specific learners as a sign of excitement caused by better learning outcome.

The study also assessed teachers' classroom practices. Teachers of Language and science subjects preferred to present a summary of recently learned content before and after the 16 week- SBT. On the other hand, Mathematics teachers preferred grouping students into smaller units in which they find a joint solution to the problems they have been given. These classroom practices remained invariant before and after engagement in communities of practice for 16 weeks. Other classroom practices that did not change before and after SBT include checking student's homework books, encouraging students to use ICT to complement their classroom learning.

On the other hand, there was observed rapid changes in some teaching practices after the 16 week -SBT and engagement in communities of practice. Some teachers completely changed their teaching approaches attributing to shared information online with other teachers. For instance, after training over 71 percent of teachers reported that they refer to a problem from everyday life to demonstrate to students why new knowledge is useful. These teachers also reported that relating practical life issues with the learnt content makes learners more curious about applicability of abstract ideas. Also, it was observed that most teachers began giving students similar tasks until they achieve minimum variance in performance as a confirmation of clear understanding. Some teachers expressed concern that this approach is time consuming but improves overall learning outcome. One of the pillars of inclusive pedagogies is appreciation of Individualized Education Programme (IEP). This approach of teaching requires the teacher to assess and determine the present of performance of each learner and design 'individualized' learning tasks for each learner.

It was observed that through these communities of practice and SBT, teachers appreciated the role of IEP in tapping into the potential of learners with diverse abilities and educational needs within an inclusive classroom. As detailed in Figure 2 below, 44 percent of teachers never used to give differentiated work to the students who have learning difficulties and/ or to those who can advance faster compared to only 21 percent who did. After 16-week SBT and engaging in communities of practice, the number of teachers who still did not give differentiated tasks dropped from 44 to 18 percent, number of teachers who did this frequently increased from 16 to 35 percent while teachers who did this in all subjects increased from 21 to 27 percent. Teachers who embraced giving differentiated tasks to students reported better scores in their subjects and students opted to join their class. For instance, one teacher reported that giving differentiated Physics tasks to a form 3 class of 6 students made come students from Christian Religious Education dropping out and joining Physics, a subject that had been thought to be difficult.

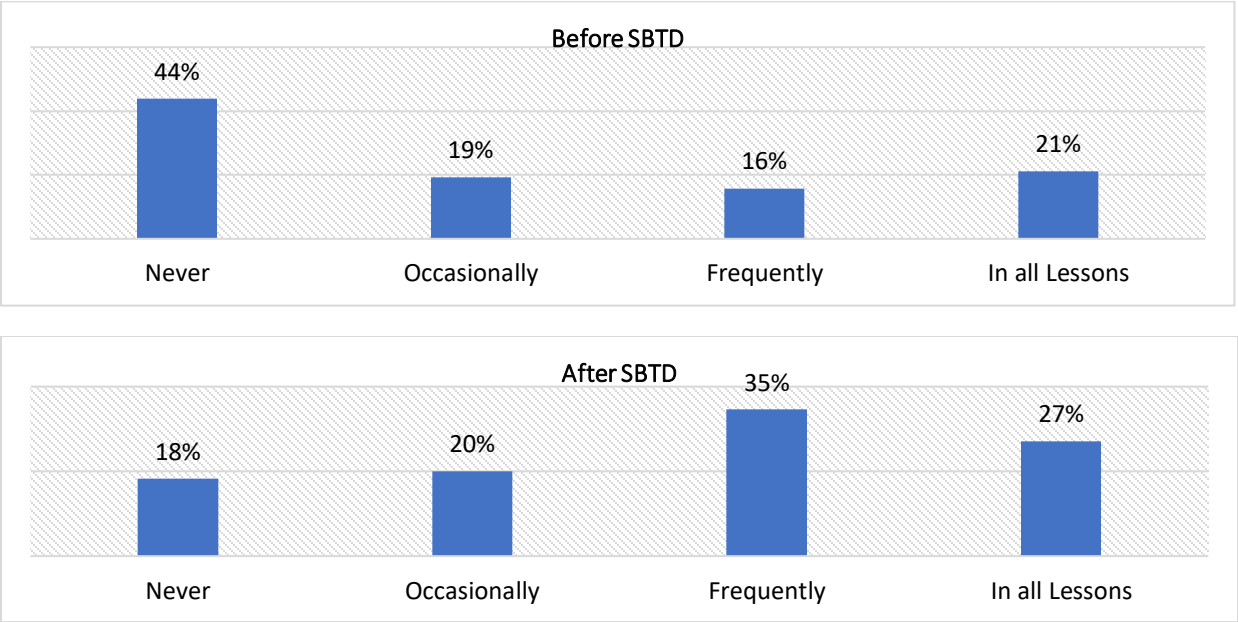


Figure 2: Use of Differentiated Classroom Assignment Before and After SBTD

The study also sought to establish the impact of teacher professional networks on learning outcome of students in secondary schools. The study indicates that forming network with other specialist teachers and teacher educators improved both learning outcome for students evidenced by higher scores in particular subjects. In this study, the teacher networks within a community of practice was measured based on the number of questions the teacher asked, number of answers they have provided on the platform and frequency of meetings the teacher attended within the 16-week period. Learning outcome was measured as the overage subject score by learners of the teacher participating in 16-week SBTD and engaging in community of practice. Infrastructure improvement was measured based on head teacher’s initiative to comply with the Universal Design for Learning (UDL) for the institutions that had learners with disabilities. A regression analysis between the teacher professional network (participation in communities of practice) [as an independent variable] and learning outcome (class average score in a subject) [as dependent variable] indicate significant positive linear relationship ($R^2 = 0.91$) as detailed in Table 2. A correlation analysis between learning outcome, network and infrastructure improvement shows positive correlation as detailed in Table 3.

Table 2: Regression Statistics

Multiple R	0.95				
R Square	0.91				
Adjusted R Square	0.90				
Standard Error	7.35				
Observations	57				
ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	28382.1	28382.1	525.6	0.00
Residual	55	2969.9	54.0		
Total	56	31352.0			
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	
Intercept	-60.6	5.1	-11.9	0.00	
Teacher Network	16.7	0.7	22.9	0.00	

Table 3: Correlation Analysis

	PERFORMANCE	TEACHER NETWORK	INFRASTRUCTURE
Performance	1		
Teacher Network	0.95**	1	
Infrastructure	0.66*	0.57*	1

6 Conclusion and Recommendation

The evidence provided from this study indicate that inclusive teacher professional development pedagogies are instrumental in enhancing student support and personalized learning. It was found from the study that teachers student learning outcome was higher when teacher practice and knowledge of inclusive pedagogies were enhanced. Learners struggling to understand some abstract concepts seemed to perform better when communities of practice engaged in pedagogical discourse on inclusive teaching of such concepts. Also, the study revealed that networking of teachers and teacher educators through communities of practice did not only increase enrolment of learners with disabilities in regular secondary schools in Kenya but also improved their academic performance and social interaction with peers. A paradigm shift in teaching pedagogies brought about by teachers networking with teacher educators through communities of practice positively influences towards inclusive learning. It was observed that when teachers appreciate the concept of universal design to learning, school administrations and boards of management allocated more money into infrastructure development to accommodate learners with diverse needs including those with disabilities and special needs in education.

There is a general consensus that school-based teacher development is an innovative teacher development strategy that minimizes the cost while increasing efficiency. Policy makers seemed to suggest that continued teacher capacity building in Kenya is impaired by high cost of teacher, a gap a SBTD fills through minimizing the logistical cost and leveraging on technology to deliver training material to the teacher's working environment. Similarly, teachers did appreciate school-based teacher development as a strategy that facilitates concurrence in training and continued classroom practice. This study recommends establishment of Kenya national coordination of teachers' communities of practice in secondary schools in line with the competency-based curriculum. These communities of practice should aim to bring together teachers in different pathways of the curriculum to not only support deeper understanding of the content, but also inculcate inclusive teaching pedagogies for each pathway. The study also recommends reforms in

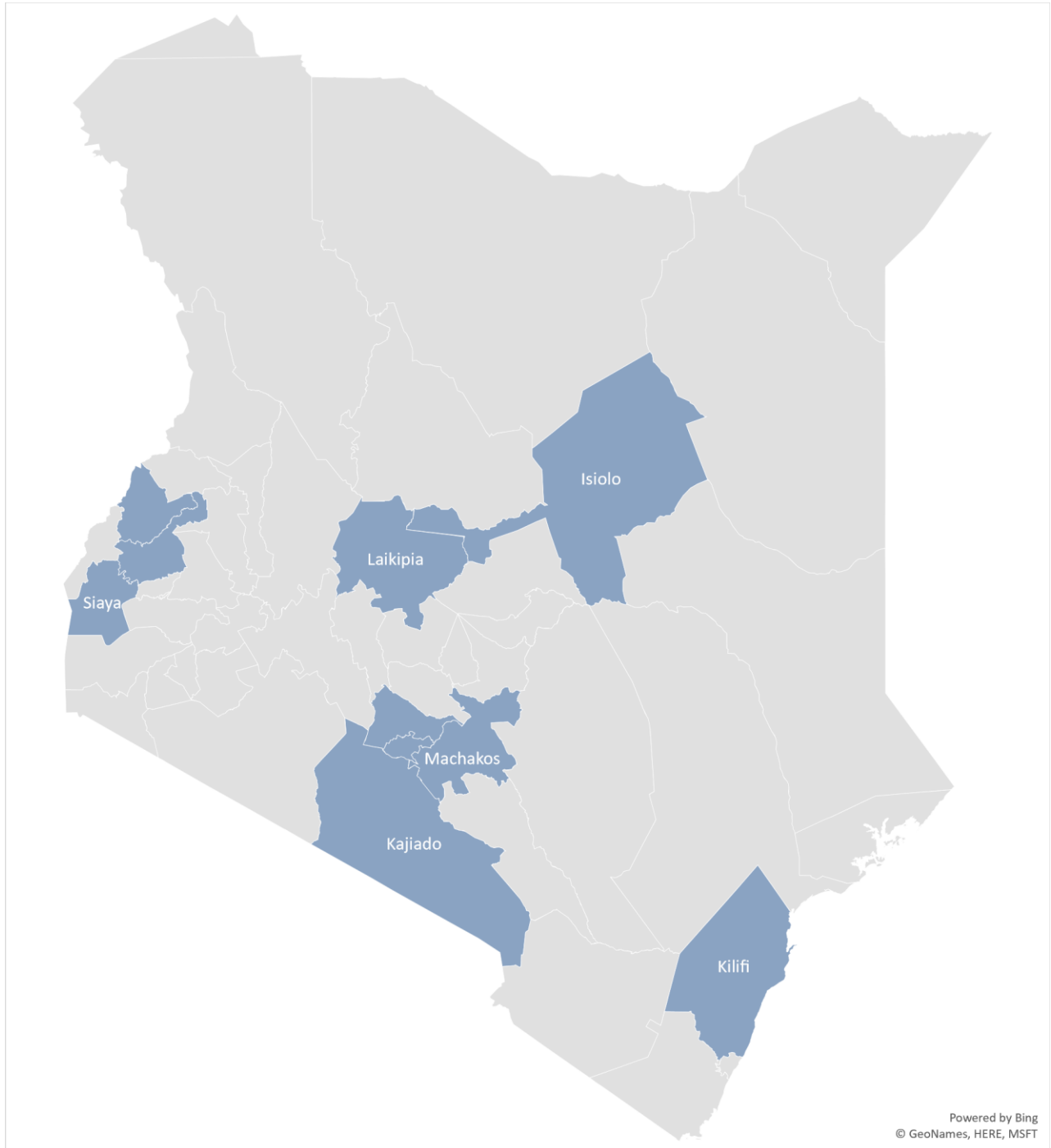
teacher professional development to include approaches that promote classroom practice rather than approaches that focus on teacher training at the expense of enhancing practice.

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APPENDICES

Appendix A1: Counties of Sampled Schools



Appendix A2: Tools supporting Teacher Communities of Practice

