



**African Population and
Health Research Center**
Transforming lives in Africa through research

Foundational Learning in Kenya

An Assessment of Teachers' Acquisition and Determinants of
Behavioral Performance in Selected Counties

2026

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List of Abbreviations and Acronyms

APHRC	African Population and Health Research Center
CBC	Competency-Based Curriculum
CBE	Competency-Based Education
CFA	Confirmatory factor analysis
CPD	Continuous Professional Development
CSOs	Curriculum Support Officers
EFA	Exploratory Factor Analysis
ESRC	Ethics and Scientific Review Committee
FLN	Foundational Literacy and Numeracy
GAD-7	Generalized Anxiety Disorder
ICT	Information and Communications Technologies
IDs	In-depth Interviews
IMBP	Integrative Model of Behavioral Prediction
IRR	Inter-Rater Reliability
KICD	Kenya Institute of Curriculum Development
KII	Key Informant Interview
KPLP	Kenya Primary Literacy Program
MoE	Ministry of Education
NACOSTI	National Commission for Science Technology and Innovation
NIH	National Institute of Health
PHQ-9	Depression Patient Health Questionnaire
PRIEDE	Kenya Primary Education Development
PRIMR	Primary Math and Reading
QASO	Quality Assurance and Standards Officers
SEM	Structural Equation Modeling
SRC	Scientific review committee
TaRL	Teach at the Right Level
TLM	Teaching and Learning Materials
TSC	Teachers Service Commission
WLSMV	Weighted Least Squares Mean and Variance

Executive Summary

Foundational literacy and numeracy (FLN) skills are the basic building blocks in learning. However, low learning achievement persists in sub-Saharan Africa, despite the various government efforts and targeted instructional interventions. It is therefore imperative to reinforce FLN through evidence on quality foundational teaching behavior that promotes improved learning outcomes. This research report presents evidence that policy actors can use to enhance learning achievement.

This study sought to investigate the quality of foundational teaching behavior, guided by context and the Integrative Model of Behavioral Prediction. Specifically, the study sought to examine observable pedagogical approaches in Kenyan foundational learning classrooms, establish the individual teacher- and school-level drivers of teaching behavior and decision-making during instruction, and examine aspects of past FLN interventions that are traceable at the school level and how teachers have kept the legacy.

The study included 200 schools selected from eleven counties (Garissa, Kisumu, Makueni, Marsabit, Murang'a, Nairobi, Narok, Taita Taveta, Turkana, Uasin Gishu, and Vihiga). Data collection and analysis followed a sequential explanatory mixed-methods approach, beginning with a quantitative component involving 398 FLN teachers teaching literacy and numeracy in Grades 1 and 3. This component examined observable classroom practices and instructional legacies, including teachers' pedagogical practices and factors associated with instructional decision-making in the classroom. Findings from the preliminary quantitative analysis subsequently informed the qualitative component, which sought to explain the observed patterns and provide a deeper understanding of teachers' instructional decisions.

The adapted Stallings Observation System (Stallings et al., 2014) was used to make observations of the pedagogical approaches that teachers used in the classroom. In addition, a questionnaire on attitude, social norms, self-efficacy, and mental health was administered to teachers to understand the drivers of teaching behavior. To reduce the risk of mental health fatigue or apathy, the mental health questionnaire was administered to a different set of teachers from those responding to the other questionnaires. In addition, a head of institution survey was administered to capture the school-level drivers of teaching behavior. Various analytical strategies such as

multi-level modeling, inferential statistics, and thematic analysis for qualitative data were used.

The study findings on the dominant teaching approaches in foundational learning classrooms reveal that:

- In a lesson of about 30 minutes, whole-class instruction was the dominant teacher focus in foundational learning classrooms, with 84.5% in literacy and 62.8% in numeracy. Small-group instruction was minimal (less than 10%).
- In numeracy, the dominant teacher action was monitoring learners (39.1%), while in literacy, it was asking questions (22.5%).
- Learner actions were largely passive or repetitive. In numeracy, learners spent most of the lesson time writing exercises (36.4%), while in literacy, they spent most of their time listening to or watching the teacher (28.7%).

Regarding the second research question, which sought to understand how teachers make instructional decisions and what drives such decisions, the findings revealed that:

- Whole-class instruction was not due to a lack of teacher awareness but rather a deliberate practice to manage large class sizes, maximize limited resources, and to promote perceived efficiency when introducing new content during lesson delivery. This goes on despite the system's emphasis on a shift from teachers as transmitters of knowledge to facilitators of learning.
- Individualized support was often provided to learners informally and outside official classroom time, such as break and lunch times, and after classes.
- Individual instructions were reactive (triggered by a learner failing to grasp a concept) rather than proactive (deliberately embedded in the lesson design).
- Availability of teaching and learning resources did not guarantee their use. The paradox in teaching and learning materials (TLM) use is that more prepared and experienced teachers were found to minimally use TLMs, perhaps due to perceived efficacy in teaching.
- Differentiated instruction was driven by the need to support learners with special needs in mixed-ability classrooms. Male teachers, younger teachers, those in

well-resourced schools, and those receiving senior management support were more likely to differentiate instruction.

- Teacher support and mentorship increased the likelihood of using effective, learner-centered strategies.
- Mental health problems are fairly common among teachers (~20%) and may negatively affect teaching behavior and practice, including lesson preparation and quality of instruction.

For the third research question on the legacy of past FLN interventions, the findings showed that:

- Past programs are associated with distinct but selective traces in current classroom practice. Teachers who reported exposure to KPLP recorded the highest mean effective teaching score (0.145) and use of teaching and learning materials (2.3 resources), while those reporting exposure to Tusome recorded the highest mean level of teacher support and mentorship (2.05 sessions per term). These patterns describe differences in observed practices according to teachers' reported intervention exposure and should not be interpreted as evidence of the comparative effectiveness of the interventions.
- Despite decades of interventions aimed at small-group and individual learner focus during instruction, whole-class instruction remains the dominant reality, motivated by large class sizes, convenience, and 'business as usual' approaches of 'passing knowledge'.
- The duration or recency of in-service training had a negligible effect on shifting teachers away from traditional teacher-centered instructional approaches.
- Information and Communications Technologies (ICT) integration during instruction was low, with minimal frequency of between 0% and 6% of instances in which teachers integrated ICT during the observed lessons.
- Four barriers limit ICT integration in foundational classrooms: infrastructural, sustainable financing, technical expertise, and skill gaps for end users.

Conclusions and recommendations

Conclusions

- A pedagogical gap exists in foundational learning classrooms, between the expected learner-centered approaches and the observed classroom practices. Teachers are physically present and active, but they are not implementing the inquiry-based learning prescribed by the CBE framework.
- The reliance on whole-class instruction (one-size-fits-all approach) risks leaving behind learners who struggle and failing to challenge those who are gifted. This does not align with the CBE's differentiated teaching, which is a core instructional strategy designed to ensure that every learner's potential is nurtured regardless of their abilities, interests, or backgrounds.
- Whereas the overall access to approved foundational learning textbooks was generally adequate, with most schools reporting fewer than two learners per textbook, there are significant county-level disparities. Marsabit County consistently reported comparatively higher learner–textbook ratios that may limit equitable access to instructional materials.
- There is a disconnect between the presence of teaching and learning resources and their integration in the teaching and learning process.
- The foundational classrooms do not reflect a single instructional model. Instead, it is a blend of multiple pedagogical practices, where past interventions continue to influence teacher behavior alongside the expectations of CBE.
- While certain past interventions have left commendable legacies on pedagogical practices such as giving encouraging feedback and teacher support, whole-class instruction remains dominant, while ICT integration can hardly be traced in instructional approaches.
- There is a disconnect between the CBE framework, which emphasizes digital literacy as a core competency, and classroom practice where ICT is minimally integrated during instruction.
- Even though teachers are learning new instruction methods, they are often unable to overcome the school-level and system-level constraints (class size, resource gaps, and curriculum pressure) that make traditional methods such as whole-class instruction a convenience.

Recommendations

- *Classroom engagement:* Shift continuous teacher professional development focus from “how to ask questions” as the dominant learner engagement strategy to practical/actionable moves on “how to facilitate peer-to-peer learning” geared towards encouraging utilization of small groups and peer support.
- *Functional community of practice (FCoP):* Heads of Institutions, with support from CSOs, should establish functional CoPs at school level, encourage continuous improvement in teaching of FLN where teachers observe one another specifically to encourage effective learner-centered instruction in the context of large class sizes.
- *Support for learners whose achievement is below learning expectations:* Strengthen teachers’ capacity in differentiated instruction, development and use of individualized education plan (IEP) to support learners during the lesson time.
- *Learner-textbook ratio in numeracy and literacy:* Data shows schools have not achieved a 1:1 learner-textbook ratio as stipulated in the MoE policy guidelines on teaching and learning materials. Given the critical role FLN plays in a child’s later education achievement, the MoE should invest in FLN textbooks sufficient for a 1:1 learner textbook ratio. In addition, the MoE should complement textbook provision with a textbook management strategy that includes regular inspection, maintenance, and timely replacement of damaged books for effective teaching and learning.
- *Legacy of FLN interventions:* The Ministry of Education (MoE) and its partners should synthesize the best aspects of past FLN interventions whose legacy is still traceable in foundational learning classrooms. The aim is to have a single, synthesized FLN instructional framework that would provide teachers with the much-needed resources for FLN teaching behavior modelling.
- *Digital technology to support FLN pedagogy.* Focus on stabilizing infrastructure, enhancing teacher skills, and modelling it to improve teaching behavior.
- *Strengthening capacity of CSOs and school leadership to mentor, coach, and supervise teachers.* This should be done through a comprehensive framework to guide the mentorship, coaching, and supervision.

- Future research to target learners with disabilities and special educational needs with a focus on teacher capacity, expected instructional approaches per category of disability, and assessment of whether learners with SNE are achieving learning outcomes in FLN.
- Future research to focus on teaching and learning at Early Childhood Education (Pre-Primary) level, focusing on whether teachers are using the expected instructional approaches and whether learners are attaining the requisite competencies.

1.0 Introduction

Education stakeholders almost agree that the most impactful learning intervention in foundational learning is improving ‘how teachers teach’. For children to realize their full potential and contribute to inclusive, equitable, and affluent societies, foundational learning is essential (UNICEF, 2023). According to the World Bank (2023), “*foundational learning is basic literacy, numeracy, and transferable skills, that are the building blocks for a life of learning*”. Despite the importance of foundational learning, learning poverty (percentage of 10-year-old children who cannot read and understand a simple, age-appropriate text) persists. For instance, in Africa, 9 in every 10 children who are 10 years old cannot read a simple text (UNICEF, 2023). In Kenya, 6 in 10 Grade 3 learners cannot read a Grade 3-level English story with comprehension, while 8 in 10 Grade 3 learners cannot solve a basic Grade 3-level numeracy problem (Usawa Agenda, 2026).

To address this poverty of learning, several instructional interventions have been implemented. For instance, in Kenya, instructional interventions such as *Tusome* (a literacy program) and *PRIEDE* (numeracy and management intervention) were implemented at scale to enhance foundational learning. The successful aspects of these structured pedagogical interventions encompass guided lesson plans, learner books, teacher support, the gradual release of responsibility approach, and instructional support, among others (Angrist et al., 2021; Piper & Dubeck, 2021). There are also other instructional strategies, though on a small scale, for example, Teaching at the Right Level (TaRL) and Learning through Play (LtP).

However, despite the heightened commitments, collaborative efforts, and increased investments in education, teachers, and teaching, the foundational learning crisis persists in sub-Saharan Africa (World Bank, 2023). In addition, available statistics suggest that many children receive instruction for years and develop foundational learning skills, but only for a short time, as learning poverty persists and learning proficiency is lost, and hence at risk of reading failure and relapse (UNESCO, 2012; Kim et al., 2020).

The risk of relapse despite reasonable efforts to improve learning skills in Africa, Kenya included, shows that learners need not only targeted instruction to improve their learning skills but also sustained effective instruction. Therefore, there is a need to shift focus from ‘learning poverty’ to ‘learning proficiency’ by investing in quality

foundational learning instructional practices that promote improved learning outcomes.

Available evidence shows that classroom instructional practices have a bearing on the achievement of improved learning outcomes in foundational literacy and numeracy. For instance, the World Bank (2023) argues that improving the quality of teaching is a prerequisite for addressing the learning crisis in low- and middle-income countries. In addition, Hoadley (2024) suggests that the curriculum content cannot be delivered without the 'how' (pedagogy).

Teachers' decision-making plays a critical role in improving learning (Piper & Benveniste, 2024). Understanding why teachers make certain pedagogical decisions during instruction is important, especially in informing design or improving structured interventions (Sitabkhan et al., 2022).

At the center of this study was to understand how teachers at the foundational level acquire and sustain effective instructional practices. Specifically, the study investigated what pedagogical approaches teachers use in foundational learning, how they change their pedagogical behavior, and why they make certain pedagogical decisions during instruction.

1.1 Theoretical framework

The study adopted the Integrative Model of Behavioral Prediction (IMBP) as expounded by Fishbein (2000), Fishbein and Yzer (2003), and Kreijns, (2013). To understand how teachers change behavior and how they make instructional decisions, IMBP posits that individual beliefs are the force behind behavioral change. Yzer (2012) argues that *'... if people believe that performing a particular behavior is a good thing, then they are more strongly motivated to perform the behavior than if they believe that performing the behavior is a bad thing'* (p.23). IMBP has three constructs that underpin the intention to change one's behavior – attitude, perceived social norms, and self-efficacy.

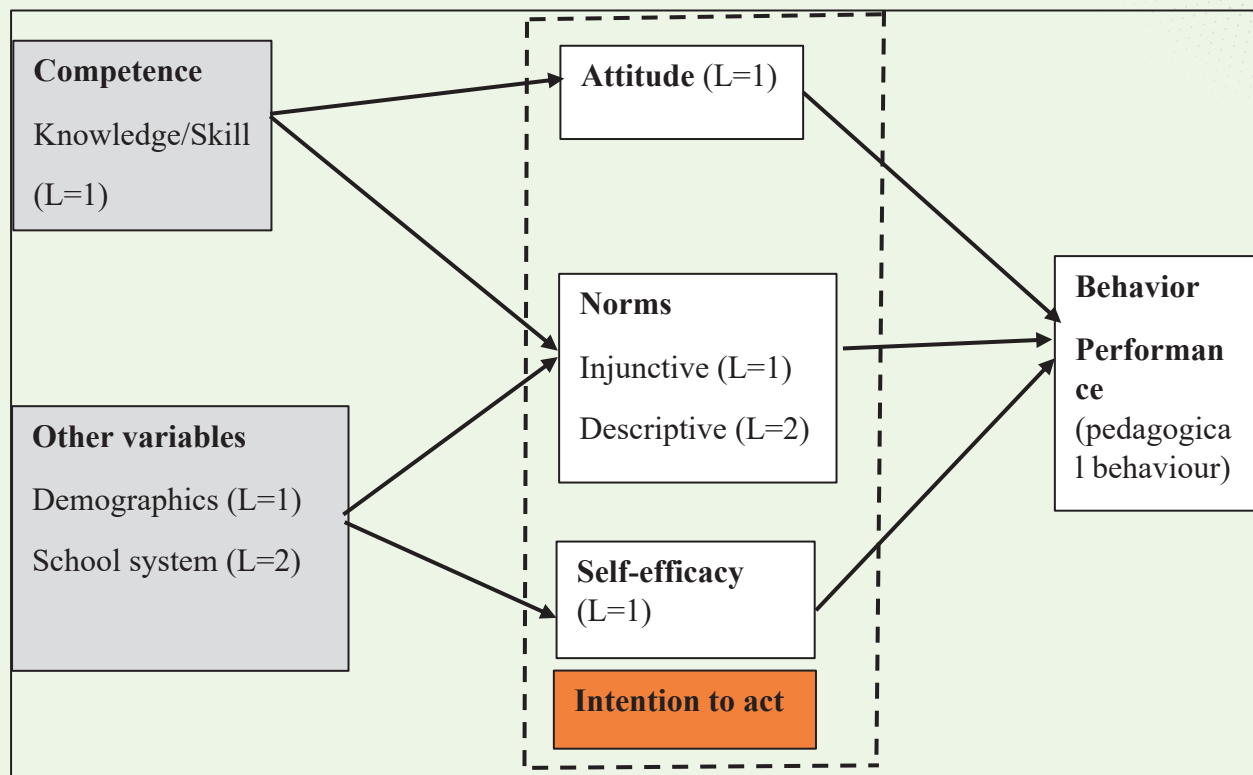
According to Better Purpose (2022), the three constructs constitute key factors that influence how teachers teach. Attitude influencing the intent to change behavior is a subject of knowledge and skills (competence) needed to carry out the behavior. Education systems expose teachers to Teacher Professional Development (TPD) initiatives whose primary purpose is to instill knowledge and skills in teaching.

Teachers are expected to use such knowledge and skills to design effective teaching strategies. Based on his/her competence, a teacher perceives the odds of performing a task as either favorable or unfavorable, influencing the action and/or decision to take.

Perceived social norms are the social or peer pressure faced while executing the behavior. It has two dimensions focusing on context-based enablers and inhibitors of carrying out the behavior. For instance, Kreijns et al. (2013) and Yzer, (2012) distinguish the two dimensions as the extent to which social networks, e.g., a community of practice or a professional association that the teacher belongs to, are supportive in the process of performing the behavior. On the other hand, is the extent to which the network members actually execute the behavior. Other network members executing the behavior provide a learning platform and confidence to perform the behavior. These two perceptions, in combination, drive the social norms. In this regard, injunctive norms represent perceived social pressure regarding what behaviors are approved or disapproved (what should be done), while descriptive norms represent perceptions of what others actually do (what is done).

Finally, self-efficacy, borrowed from Bandura's (1997) work, focuses on an individual's perception of his/her capability to perform a behavior. This is a conviction that one can perform the behavior and overcome any potential or real barriers to executing it. In the case of a teacher, this could be inadequate teaching resources, among other things. Self-efficacy is independent of competence – it's a belief that one can do it.

Figure 1 is a simplified representation of the IMBP and its application to the proposed study. This conceptualization is based on the understanding from the literature that posits that for any defined population (in this case teachers), there exists a 'small number' of enabling or impeding indicators that explain a substantial proportion of the variance (Fishbein & Ajzen, 2010). *Figure 1* hypothesizes that drivers or variables (such as teacher knowledge and skills, demographics, school systems, context, and socio-economic status), individually or in combination, constitute the three constructs (teachers' attitude, norms and self-efficacy) described earlier in this section. The task for this study is, therefore, to identify these variables (enablers or inhibitors) and the contexts in which they can potentially thrive and/or be altered to enhance teacher behavior performance.

Figure 1. Conceptual relationship of variables that influence behavior performance

Note. L=1 represents variables at individual level, while L=2 represents variables at school level

1.2 Objectives

The overall objective was to investigate **what** pedagogical approaches teachers use in foundational learning, **how** teachers change their pedagogical behavior and **why** they make certain pedagogical decisions during instruction.

The specific objectives of the study were to:

- Identify and examine observable pedagogical approaches in Kenyan foundational learning classrooms.
- Determine drivers of teaching behavior and decision-making during instruction.
- To assess the extent to which teachers exposed to past FLN interventions and CBE practice the expected teaching approaches in literacy and numeracy.

1.3 Research questions

The research questions for the study are:

- What are the dominant teaching approaches used by foundational literacy and numeracy teachers?
- How do teachers in early years education decide on teaching approaches to use during instruction?
- To what extent do teachers exposed to past FLN intervention and CBE practice the expected teaching approaches in literacy and numeracy?

1.4 Methodology

Research design

This was an exploratory study utilizing an observational cross-sectional design. A mixed-methods approach was used to capture and analyze data, starting with the quantitative methods to investigate observable practices and legacies such as teacher pedagogies and how they link to instructional decision-making inside the classroom. The qualitative component then followed to explain the patterns emanating from the preliminary quantitative data analysis.

Study setting

The study was conducted in 11 counties in Kenya (Garissa, Kisumu, Makueni, Marsabit, Murang'a, Nairobi, Narok, Taita Taveta, Turkana, Uasin Gishu, and Vihiga), which were purposively selected to span Kenya's administrative regions (Nairobi, Central, Coast, Central Rift, North Rift, South Rift, Upper Eastern, Lower Eastern, Nyanza, Northeastern, and Western). This geographical spread was considered to increase the richness of the context and potentially the chances of capturing varied teaching experiences and/or behavioral performance, and the need to generate findings that are nationally representative of the entire country.

Target population, sampling and sample size

The study targeted teachers teaching grades 1 and 3, and heads of institutions in early comprehensive (primary) public schools. The sampling frame consisted of all public basic education institutions obtained from the Ministry of Education. We restricted this frame to schools classified as "Regular," "Integrated," or "Regular with

Special Unit,” thereby excluding special schools and private schools. This yielded a total of 4,948 eligible schools across the 11 study counties and 91 sub-counties.

A total of 200 schools were sampled using a proportional allocation approach, whereby each county’s share of the sample was determined by its proportion of eligible schools in the national sampling frame. The final allocation ensured that counties with more schools contributed a larger share to the sample.

A multi-stage sampling approach was used to select sub-counties and schools to be included. Within each county, all sub-counties were listed, and four sub-counties were randomly selected without replacement, meaning that each county had one chance of being selected. In counties with fewer than four sub-counties, all were included. Sampling of schools was restricted to these selected sub-counties. Each county’s quota of schools was then distributed proportionally across its selected sub-counties, based on the number of eligible schools per sub-county. To ensure operational feasibility, each sub-county received two quotas: a main sample quota (to be visited) and a backup quota equal to 50% of the main quota, used only for replacements in case of school inaccessibility or refusal.

Schools were then randomly selected within each selected sub-county, without replacement. Each sampled school was labelled as “Main” or “Backup.” In each school, two teachers (grade 1 and grade 3 teachers) were selected and/or randomly assigned in cases where a school had more than one stream, giving a teacher sample of 400. In each grade, half of the teachers were observed teaching a literacy lesson while the other half were observed teaching a numeracy lesson.

Scientific and Ethics Review

The study protocol and tools were reviewed by the African Population and Health Research Center (APHRC) Scientific Review Committee (SRC) to ensure that it met the scientific rigor and ethics requirements and was approved on 30th January 2025. This was followed by an ethics review by Amref Health Africa Ethics and Scientific Review Committee (ESRC), which provided approval (ESRC P1823/2025) on 17th March 2025. A research license (NACOSTI/P/25/417504) was granted by the National Commission for Science, Technology and Innovation (NACOSTI) on 27th March 2025. Further, the study protocol and tools were validated by the stakeholders in foundational learning on 30th April and the Ministry of Education on 20th May

2025. Finally, the research team was granted approval by the Ministry of Education to access schools on 26th May 2025.

Additional ethical considerations were as follows: Written informed consent was sought from the research participants, participation was voluntary, and the risks and benefits of the study were described to the study participants. In addition, all the investigators completed the National Institutes of Health (NIH) web-based course on protecting human research participants, and all the field staff received training on research ethics.

Data Collection Tools

Table 1. Description of the study quantitative and qualitative tools

Data collection tool	Respondent	Tool description
Classroom observation schedule for literacy and numeracy	Grade 1 and 3 teachers were observed during a literacy or numeracy lesson	The classroom observation schedule utilized a Stallings snapshot approach to record the pedagogical approaches teachers use in the classroom during instruction
Head of institution questionnaire	Heads of institutions from the 200 schools across 11 counties	The head of institution questionnaire was used to collect data on school level drivers of teaching behavior, and on past aspects of FLN interventions (if any) that are traceable at the school level
Teacher questionnaire	Observed teachers in grade 1 and 3	The focus of this tool was teachers' self-efficacy, attitudes and norms.
Teacher mental health questionnaire	Grade 2 teachers from 200 schools across the 11 counties	Consisted of standardized Generalized Anxiety Disorder (GAD-7) measurement scale for anxiety and Patient Health Questionnaire (PHQ-7) for depression
Video filming	Grade 1 and 3 teachers filmed while delivering a literacy or a numeracy lesson	Was conducted with an over 80% focus on the teacher. The intention of video filming was to take deeper dives in evaluating teacher pedagogical practices in Kenyan schools.
In-depth interview guide	Selected grade 1 and 3 teachers who were observed delivering a literacy or numeracy lesson	Was used to get insights to explain and illuminate the trends and patterns that were seen through a preliminary analysis of classroom observation data.

Key informant interview guide	Curriculum support officers in the 11 counties (1 per county)	This tool was intended to provide more insights into teacher support, teacher professional development opportunities and contextual factors that drive teaching behavior
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Data Collection - Quantitative Phase

Reliability of research tools: The Cronbach's Alpha was 0.962 for Mental health items, that is 0.79 for the Generalized Anxiety Disorder-7 (GAD-7) and 0.84 for Patient Health Questionnaire-9 (PHQ-9). In addition, the Cronbach's Alpha scores for the teacher tools were 0.85 for norms, 0.83 for self-efficacy, and 0.74 for teacher attitude items.

The inter-rater reliability (IRR) was computed using responses from 65 field staff drawn from 11 counties. Each of them independently coded the same classroom observation video that captured four key domains: teacher focus, instructional content, teacher action, and learner action.

For each snapshot within each domain, IRR was calculated by identifying the response category selected by the largest number of field staff (the modal response). The level of agreement was then computed as the proportion of assessors who selected this same response out of all assessors who coded that snapshot, producing a percent agreement score per snapshot.

These snapshot-level agreement scores were then averaged across all snapshots within each domain to generate overall IRR estimates for teacher focus, instructional content, teacher action, and learner action. In addition, responses were compared to those of a benchmark observer (expert) by calculating the proportion of matches at each snapshot, providing an additional check on consistency and accuracy. The literacy and numeracy classroom observation tools achieved an IRR of 82.7% and 84%, respectively. While it is difficult to achieve perfection, these IRRs were high enough to guarantee data quality. Where variations in patterns were identified, targeted feedback was conducted. However, this was minimal, as most field interviewers had backgrounds as education researchers or teachers.

Overall, 200 heads of institutions responded to the institutional questionnaire, 198 classroom observations were conducted for literacy lessons and 198 for numeracy, 44 classroom videos were recorded, 221 teachers took the mental health survey, and

398 teachers took the self-efficacy, norms, and attitude questionnaire. Spot-checks were conducted by the research team and Ministry of Education officials to ensure fidelity of data collection procedures.

Training for the quantitative component took place from May 19 to 23, followed by data collection from May 28 to June 18, 2025.

Data collection - qualitative phase

Being a sequential study, the qualitative tools development process involved: (i) review of preliminary quantitative findings by the research team to identify the issues for follow-up in the qualitative phase, (ii) development of a mapping and linkage chart to link the follow-up issue to the study's research questions, and (iii) development of the qualitative data collection tools. Qualitative data were collected from 44 teachers and 11 CSOs sampled purposively from the 11 Counties in Kenya between September 29 and October 18, 2025, through telephone interviews.

Data analysis

Quantitative data analysis

Quantitative data used 5 analytical strategies, namely:

- Descriptive statistics such as frequencies, means, proportions, and cross-tabulations.
- Exploratory factor analysis (EFA) to examine the measurement properties of the psychosocial constructs. This was followed by a reliability and validity assessment, as well as a confirmatory factor analysis (CFA) to validate the measurement model.
- A Structural Equation Model (SEM) was estimated to examine how teaching behaviors are shaped by teacher characteristics and school-level factors.

Qualitative data analysis

The follow-up qualitative data obtained from the teachers and CSOs in the form of audio recordings were transcribed verbatim. A codebook containing a list of emerging codes, their definitions, and labels was developed for use in coding the rest of the transcripts. The coded report was then used to generate themes (Braun & Clarke, 2012), which were reported as findings to explain the quantitative findings

or to introduce new perspectives that were not observed from quantitative data. Credibility and trustworthiness of the qualitative data were ensured through the involvement of multiple research members in the code generation process, triangulation of data collected through teacher in-depth Interviews (IDIs) with the CSO key informant interviews (KIs), and use of thick descriptions in the narrative build up (Younas et al., 2023).

2.0 Study findings

2.1 Teacher and school characteristics

Teacher characteristics

A total of 398 teachers (198 teaching grade 1, and 200 grade 3) participated in the study from across 200 schools and 11 counties in Kenya. As highlighted in Table 2, about 98% of the teachers had professional teacher training, with a majority of them having certificate training. In addition, 75% of teachers were female. Table 2 shows the teachers' demographic characteristics disaggregated by grade.

Table 2 Teacher's demographic characteristics

	Grade 1 n = 1981	Grade 3 n = 2001
Qualifications		
No training	6 (3.0%)	2 (1.0%)
College Certificate	98 (49.5%)	101 (50.5%)
College Diploma	74 (37.4%)	75 (37.5%)
Degree (Bachelors)	19 (9.6%)	22 (11.0%)
Masters/PHD	1 (0.5%)	0 (0.0%)
Years of experience		
<1 year	42 (21.2%)	35 (17.5%)
1–3 years	55 (27.8%)	68 (34.0%)
3–5 years	41 (20.7%)	38 (19.0%)
5+ years	60 (30.3%)	59 (29.5%)
Gender		
Male	47 (23.7%)	53 (26.5%)
Female	151 (76.3%)	147 (73.5%)
Age of teachers	n=156	n=166
19-29	12 (7.7%)	17 (10.2%)
30-39	78 (50%)	75 (45.2%)
40-49	34 (21.8%)	42 (25.3%)
50-59	30 (19.2%)	29 (17.5%)
60+	2 (1.3%)	3 (1.8%)

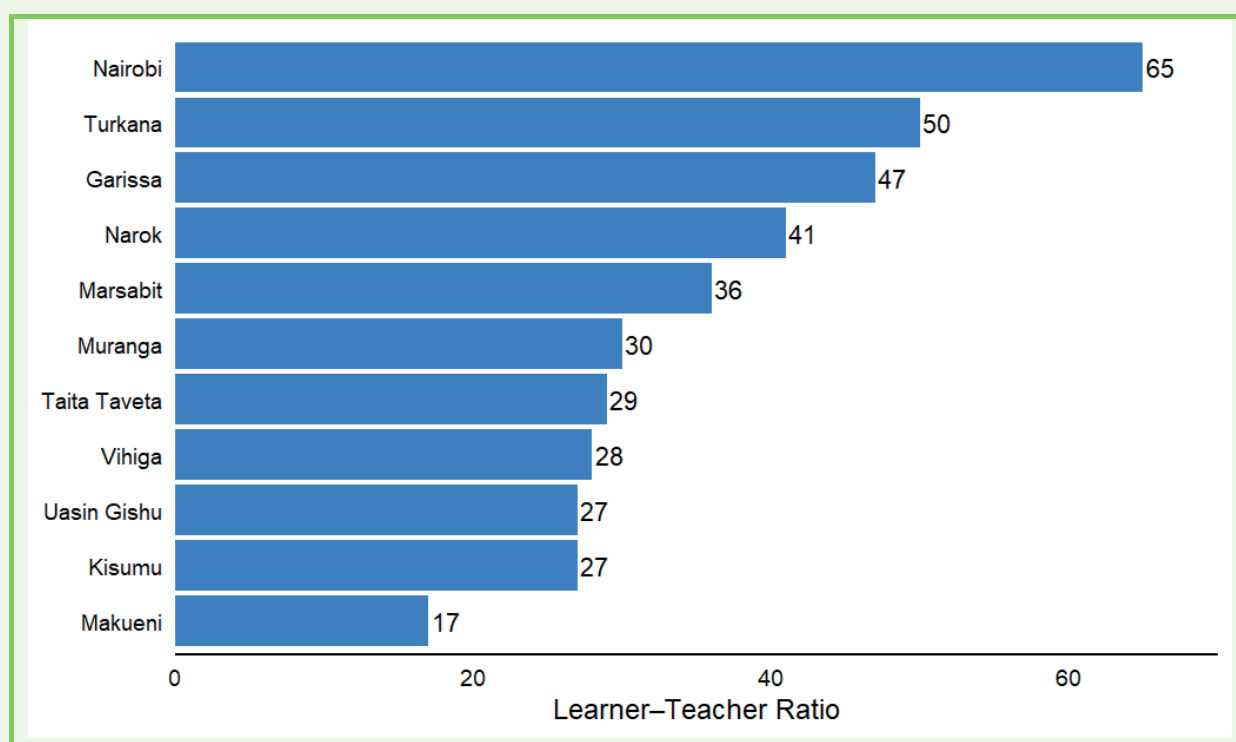
Note. The response rate on teachers' age was 81% (n=322) since the age category was optional in the teacher questionnaires.

School characteristics

Learner-teacher ratio

The learner-teacher ratio (based on headteacher data for grades 1-3) ranged from 17:1 in Makueni to 65:1 in Nairobi County showing significant variability across counties. On average, the pupil teacher ratio was 36:1. *Figure 2* shows the average number of enrolled learners per teacher by county.

Figure 2. Average number of learners per teacher by county



Learner-textbook ratio and textbook condition

Figures 3-5 show the number of learners sharing a single KLB textbook in Mathematics, English, and Kiswahili for Grades 1–3. The textbook counts were obtained through direct observation by trained fieldworkers, who were instructed to physically count CBC-approved textbooks. The head of the institution provided the learner enrollment figures for the current school year. The learner-textbook ratio is based on the total enrollment figures for learners in Grades 1-3 and the total number of textbooks by the Kenya Literature Bureau (KLB).

The learner-textbook ratios indicate that generally, schools in the target counties had relatively good access to approved textbooks for foundational learning, with a majority reporting fewer than two learners per English, Kiswahili, and Mathematics

textbook. The findings, however, highlight disparities in availability of these learning resources by county, grade level, and learning area.

Across all three learning areas, Marsabit recorded the highest learner–textbook ratios across Grades 1–3, indicating the greatest shortages in access to approved textbooks. On the other hand, Vihiga consistently reported the lowest learner–textbook ratios, suggesting comparatively better access to textbooks.

Figure 3. *Learner access to approved mathematics textbooks*

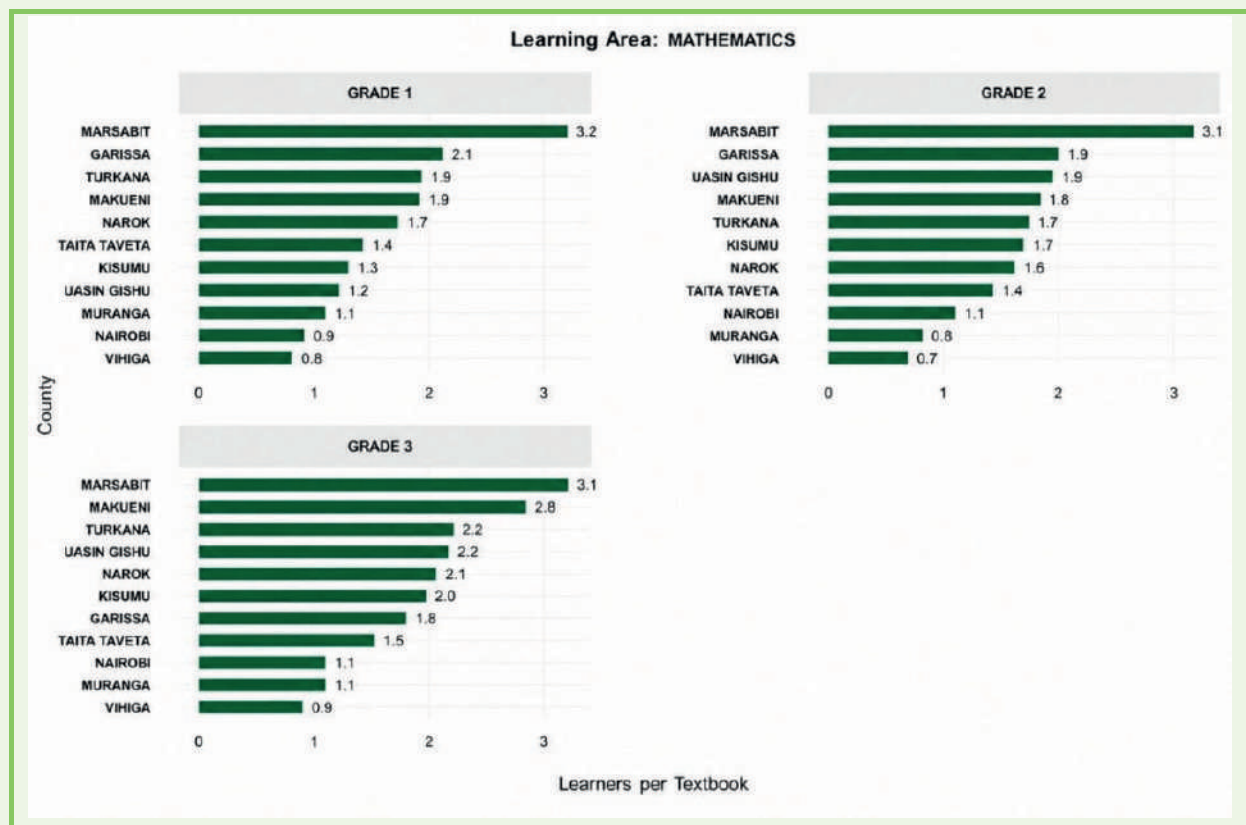
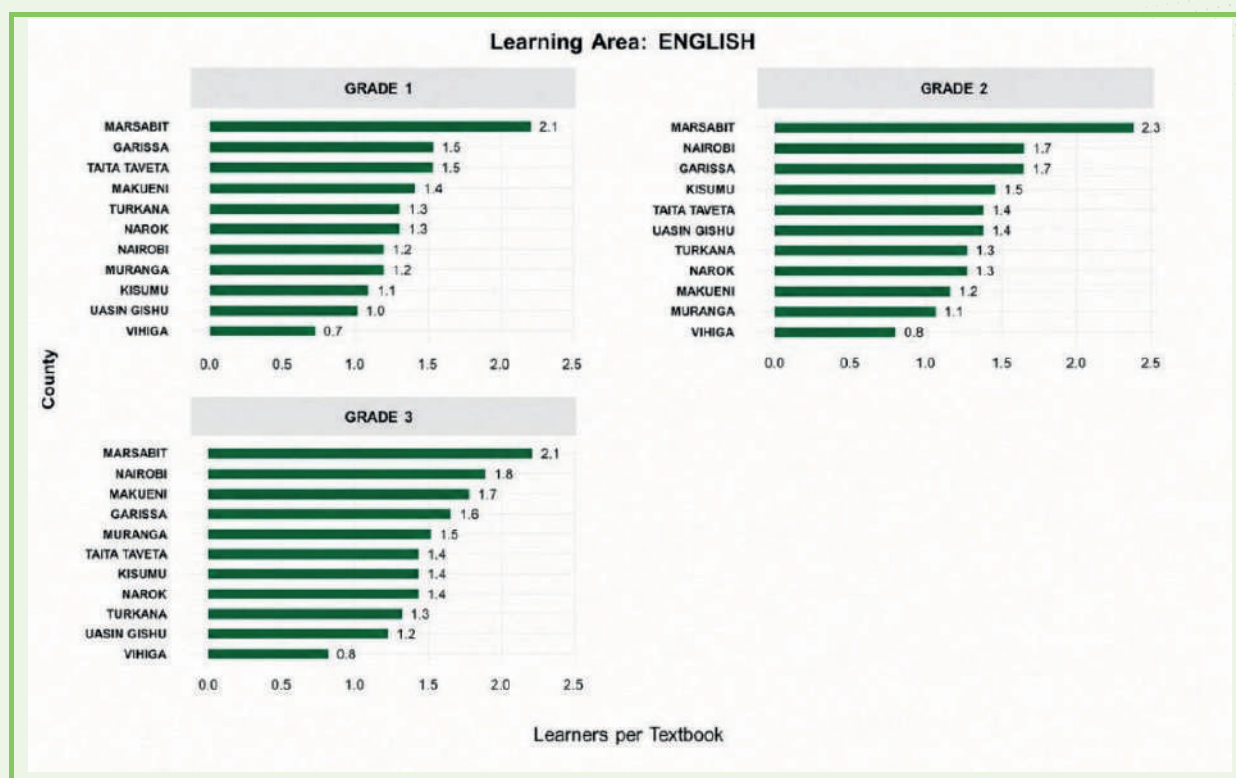
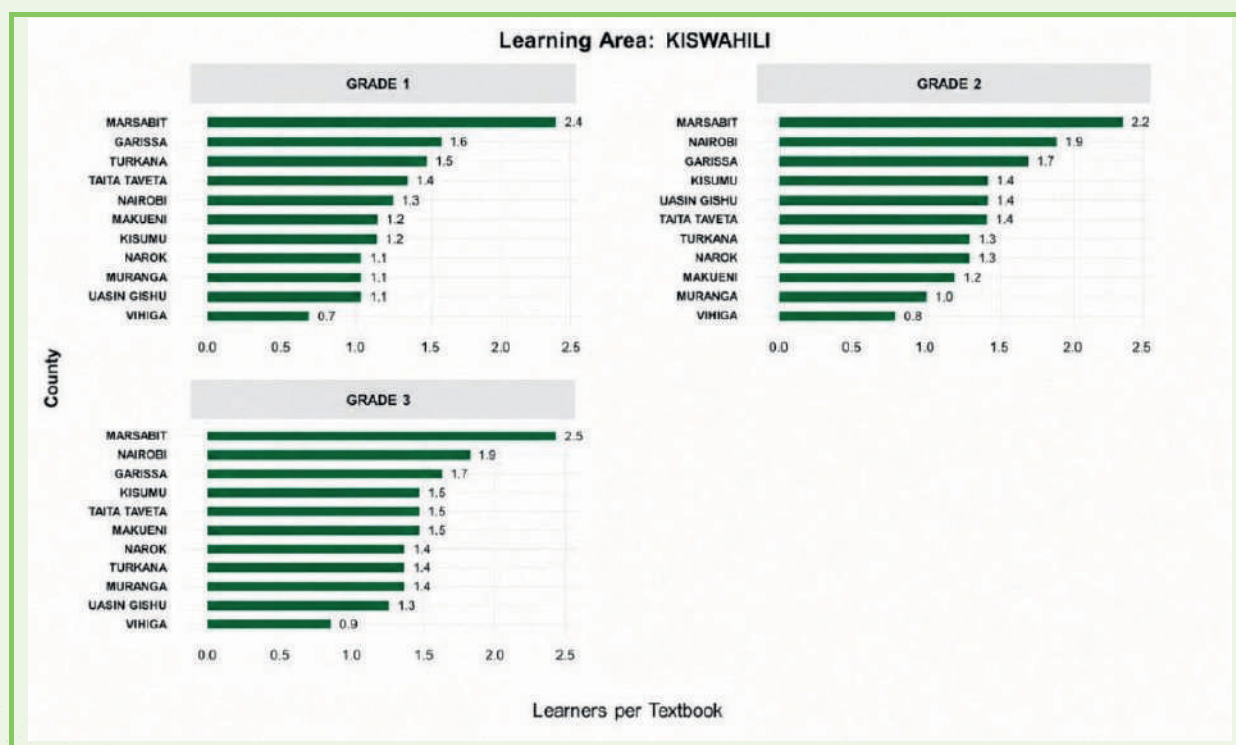
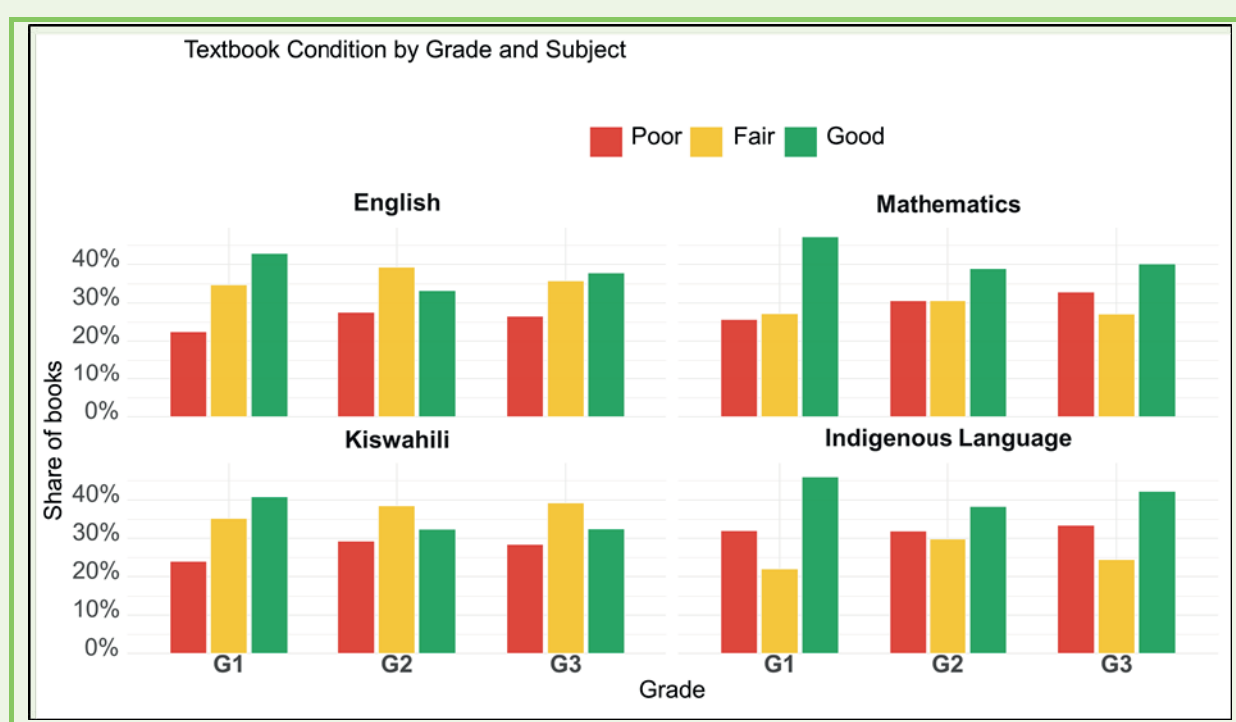


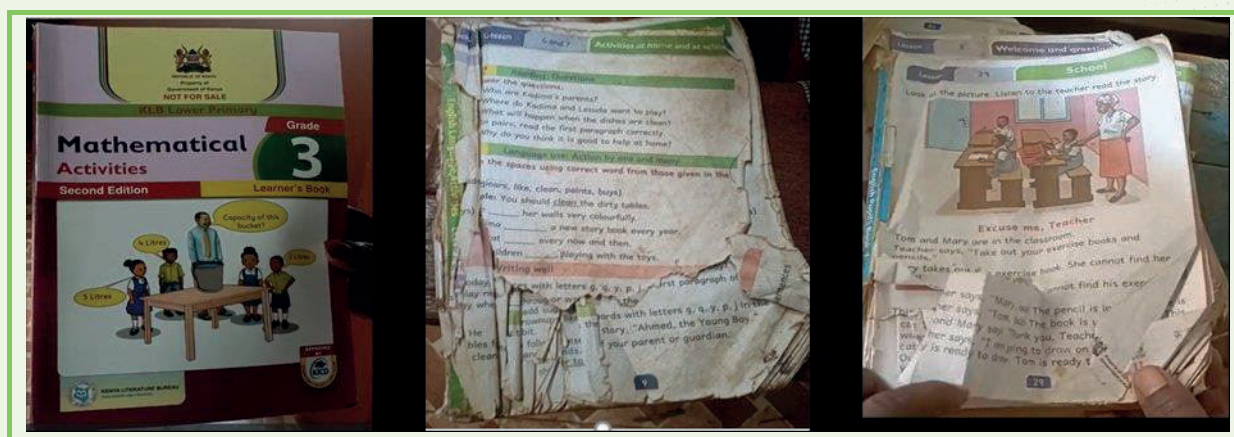
Figure 4. *Learner access to approved English textbooks*Figure 5. *Learner access to approved Kiswahili textbooks*

Further analysis of the condition of the available textbooks (*Figure 6*) found that, overall, a larger proportion of the approved Mathematics, English, and Kiswahili textbooks across all the grades were in good condition. This was with the exception of Grade 2 English and Kiswahili textbooks, where a majority of the books were in fair condition. The substantial proportion of textbooks classified as being in fair or poor condition indicated wear and tear that could affect their usability. These findings highlight the need for complementing textbook distribution with regular maintenance and replacement of damaged books for effective teaching and learning.

Figure 6. *Textbook condition by grade and learning area*

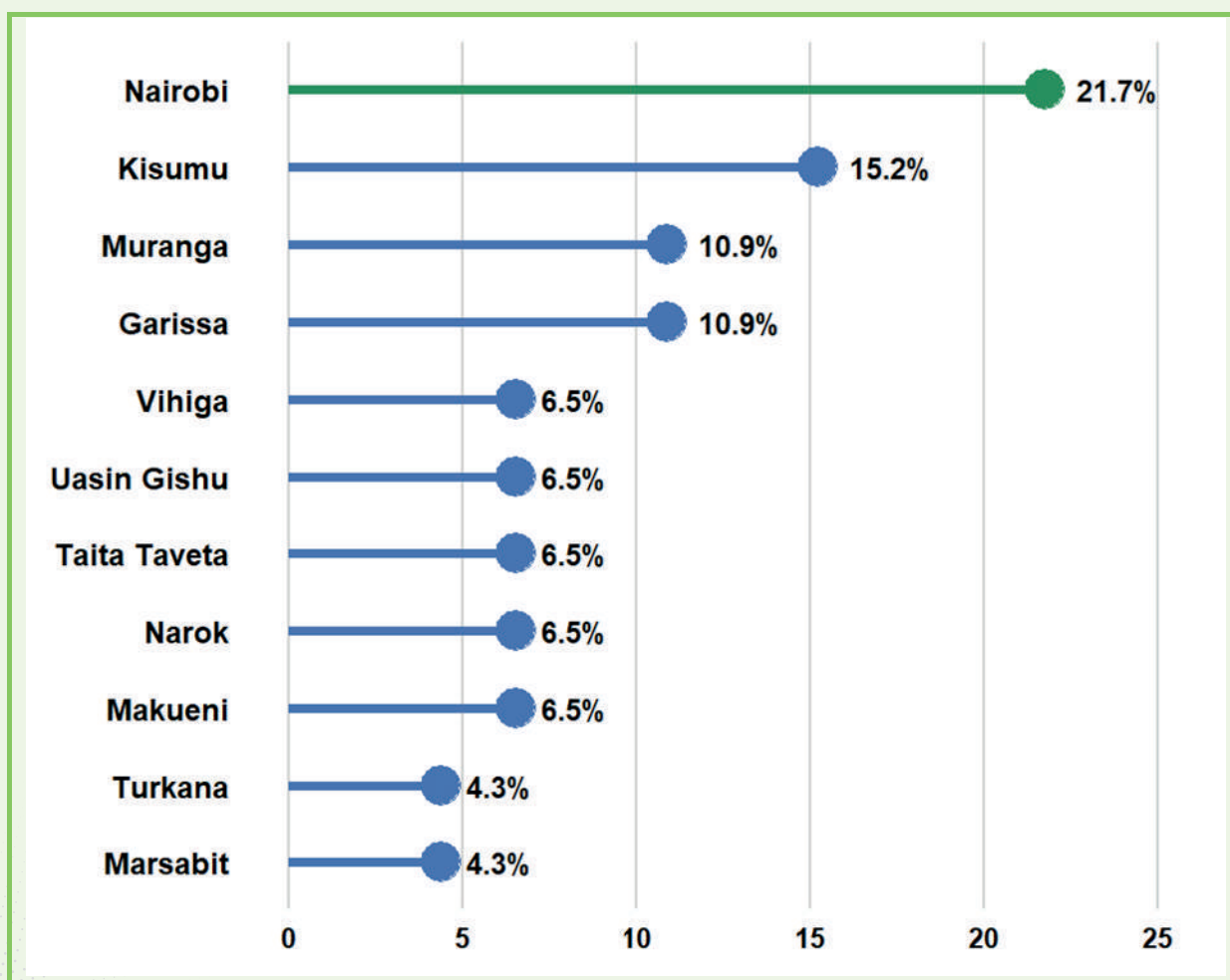


Our observation of textbook appearance (physical conditions) shows that while some schools, classrooms, and learning areas had recently received new government textbooks, in others the books were worn-out (as shown in Figure 7). In view of the observed conditions, the learner textbook ratios shown in figures 3-5 underestimate the pupil textbook ratio of usable textbooks.

Figure 7. Physical appearance of textbooks in the hands of learners

ICT infrastructure

Nairobi and Kisumu reported the highest proportion of schools designated computer labs. On the other hand, Turkana and Marsabit reported the lowest. Figure 8 shows the proportions of schools with digital infrastructure by county.

Figure 8. Proportion of schools with digital infrastructure by county

2.2 Dominant teaching approaches

Document analysis and synthesis

The synthesis of expected teacher behaviors was conducted through a document analysis of six key foundational learning programs implemented in Kenya (KICD, 2019; Piper et al., 2016; Republic of Kenya, 2017; USAID, 2012, 2023), including *Tusome*, Kenya Primary Education Development (PRIEDE), Primary Math and Reading (PRIMR) Program, Kenya Primary Literacy Program (KPLP), and Teaching at the Right Level (TaRL). The review also included the Competency-Based Education (CBE) system. The synthesis was performed in three phases:

- Identification of pedagogical dimensions: The interventions were reviewed to identify recurring themes in teacher practice. This resulted in the establishment of nine core pedagogical dimensions: teacher focus, learner engagement, use of teaching and learning materials (TLMs), feedback, teacher engagement/professional development, differentiated instruction, lesson development, support supervision, and ICT integration.
- Comparative mapping: Each intervention was mapped against these dimensions to identify both cross-cutting approaches and unique instructional strategies.
- Synthesis and benchmarking: The findings from the individual interventions were synthesized by distilling specific practices into a set of standardized expectations, which are presented as a benchmark for the expected teacher behaviors and practices for the classroom observations.

Expected teacher behaviors and practices

A review of the identified foundational learning programs implemented in Kenya revealed a consistent shift toward learner-centered pedagogy. The expected teacher behaviors and practices are summarized in *Table 3*.

The foundational learning programs also highlighted that teachers should demonstrate preparedness through well-developed schemes of work and lesson plans that follow structured pedagogical approaches such as the gradual release of responsibility, also referred to as “I Do, We Do, You Do,” ensuring effective time use and lesson flow.

Overall, the expected teacher behavior across these foundational learning initiatives reflects a coherent pedagogical vision that emphasizes active, inclusive, and reflective teaching; formative and feedback-driven assessment; and strong professional collaboration and community/parental involvement. These expectations provide a useful benchmark for contextualizing and interpreting the dominant teacher behaviors and pedagogical practices observed in the classroom observation study.

Table 3 . *Expected teacher behaviors and practices*

Pedagogical Dimension	Expected Teacher Behavior and Practice
Teacher Focus	Teachers act as facilitators of learning rather than transmitters of knowledge. They guide learners through discovery, inquiry, reasoning, analysis, and collaboration. Lessons emphasize learner-centered approaches such as group work, projects, and peer tutoring. Teachers are expected to nurture learners' diverse interests, abilities, and talents.
Learner Engagement/Participation	Teachers create opportunities for learners to engage in active, hands-on learning that will produce an independent learner. This includes pair and group work, project-based tasks, role play, and community-based learning. Lessons are interactive, inclusive, and responsive to learner diversity and individual pace.
Use of Teaching and Learning Materials (TLMs)	Teachers deliberately and creatively use instructional resources, including textbooks, realia, teacher-made materials, and ICT tools, to enhance understanding. Materials should be age-appropriate, inclusive (e.g., Braille, large print, and captions), and aligned with lesson objectives. Teachers are encouraged to improvise when resources are limited.
Assessment feedback	Teachers provide immediate, positive, and constructive feedback to support learning and correct misconceptions. Feedback is formative and continuous, both verbal and written, and focuses on individual learner progress. Peer feedback is also encouraged.
Teacher Engagement and Professional Development	Teachers actively participate in professional learning processes (e.g., lesson study, cluster meetings, school-based communities of practice). Teachers engage in ongoing reflection, peer learning, and mentorship. This includes participation in lesson study, cluster meetings, and school-based communities of practice. Programs emphasize structured support through Continuous Professional Development (CPD), coaching by CSOs/QASOs, and retooling.

Differentiated Instruction	Teachers adapt instruction to meet diverse learner needs and levels. This includes differentiated tasks, scaffolding (gradual release of responsibility) for struggling learners, and inclusive strategies for learners with mild disabilities. Teachers are expected to use assessments to tailor instruction (“teach at the right level”) - assessment for learning.
Lesson Development (Preparedness and Time Management)	Teachers prepare structured schemes of work and lesson plans that clearly outline objectives, activities, and assessment strategies. Lessons follow a logical sequence, modeled as “I Do, We Do, You Do”, and allocate time efficiently for explanation, practice, and feedback.
Monitoring and Support	Teachers collaborate with instructional coaches, CSOs, and headteachers who provide classroom-based feedback and mentoring. Supervision emphasizes supportive coaching rather than inspection. Teachers are expected to respond to feedback and demonstrate continuous improvement.
ICT Integration	Teachers use ICT for instructional support, lesson preparation, and assessment tracking. Tablets, e-resources, and virtual learning communities (e.g., WhatsApp) are employed for peer learning and reporting. Digital literacy is encouraged for both teachers and learners.

Dominant teaching approaches used in FLN classrooms

The numeracy and literacy classroom observation tools were adapted from the Stallings Classroom Observation System (Stallings et al., 2014). The adapted tool focused on making real-time observations of teacher focus, instructional content being covered, teacher action, learner action, and teaching and learning materials used during the lesson. The observations were made at ten equal intervals (every three minutes) throughout the lesson. In early grade classes, lessons run for 30 minutes. Below is a description of the key classroom observation domains:

- Teacher focus evaluated the teachers’ instructional efforts. Whole class focus meant that the teacher was engaging all learners simultaneously; small group instruction meant that the teacher was working with a subset of learners; and one individual learner focus meant that the teacher was providing one-on-one support. The domain also captured instances where the teacher was disengaged, not present, or involved in transition activities such as grouping learners or distributing resources.

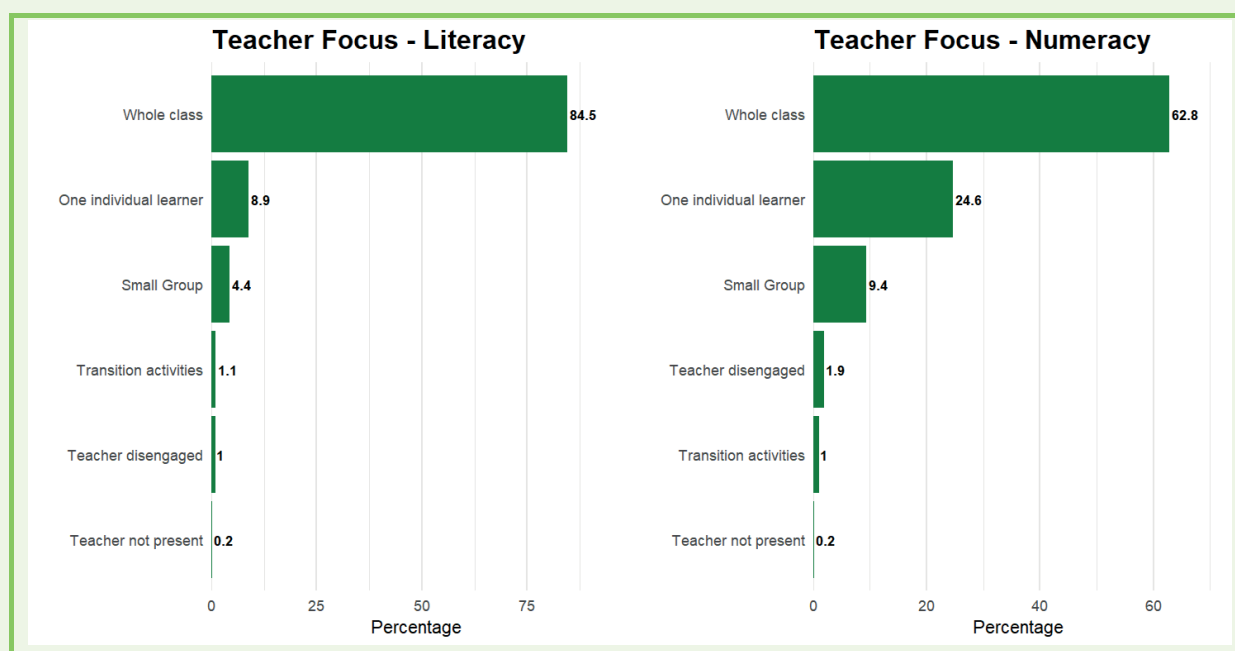
- Instructional content captured the specific subject matter being addressed during the lesson for a mapping of curriculum coverage. The identified content areas were adapted from the grades 1 and 3 curriculum designs. In literacy, the content areas included pre-reading, reading fluency, reading comprehension, listening comprehension, pre-writing, writing, and language use/grammar. Numeracy included number concept, whole numbers, fractions, addition, subtraction, multiplication, division, length, mass, capacity, time, money, position and direction, shapes, and lines.
- Teacher action covered the specific pedagogical behaviour that the teachers exhibited. It captured active instruction actions like leading recitations, lecturing, asking oral questions, and demonstrating/explaining activities; monitoring actions like moving around the room to observe learners, marking work, and providing feedback during instruction; and classroom management actions including giving instructions, maintaining classroom discipline, or handling transition activities. This domain also captured instances where the teacher was disengaged or not present.
- Learner actions evaluated the nature of learner engagement, including answering questions, repeating/reciting, writing on the board, participating in learning games and role-play, choral or silent reading, using manipulatives, and completing exercises. Off-task or passive activities like socializing, sleeping, or playing were also captured.
- Use of teaching and learning materials evaluated the type of resources utilized during the lesson observation. They included blackboard, teacher guides, learner textbooks, exercise books, flashcards, charts, digital devices, realia, and manipulatives.

Findings on Teacher Focus

The descriptive findings showed that whole-class instruction overwhelmingly dominated teacher focus across foundational literacy and numeracy lessons. In literacy, 84.5% of teachers' focus time was directed at the whole class, while in numeracy, it was 62.8%. This pattern indicated that lessons were largely delivered through teacher-led instruction directed to the whole class rather than through differentiated, small-group, or individualized approaches. Other forms of teacher focus, such as engaging with a single learner or working with small groups, occurred

less frequently. For example, the focus on small groups stood at 4.4% and 9.4% for literacy and numeracy, respectively. Further, there were minimal cases of teacher disengagement, being inactive, spending long periods transitioning between activities, or leaving the classroom.

Figure 9. *Dominant teacher focus during literacy and numeracy instruction*



The observed dominance of whole-class teaching indicates a misalignment between the intended learner-centered pedagogy and actual classroom practice. This pattern suggests that while teachers remain actively engaged, their instructional focus tends toward uniform delivery rather than differentiated support, potentially hindering progress for learners at varying competency levels. The findings are aligned with recent studies showing a disconnect between policy aspirations and classroom practices. Findings from previous studies showed that classroom practices remained teacher-centered despite emphasis on learner-centered and inquiry-based learning due to large class sizes, limited teacher training, limited time to cover instructional content, and insufficient teaching and learning materials (Donkoh & Amoakwah, 2024; Tegegne et al., 2025). The importance of learner-centered instructional approaches cannot be understated. Studies show a strong association between learner-centered, active in-class pedagogies and improvements in critical thinking skills among learners, even greater than curriculum alignment, assessment designs, and cognitive level of learning objectives (Holt et al., 2015). This highlights the impactful role of teachers on learners' critical thinking outcomes.

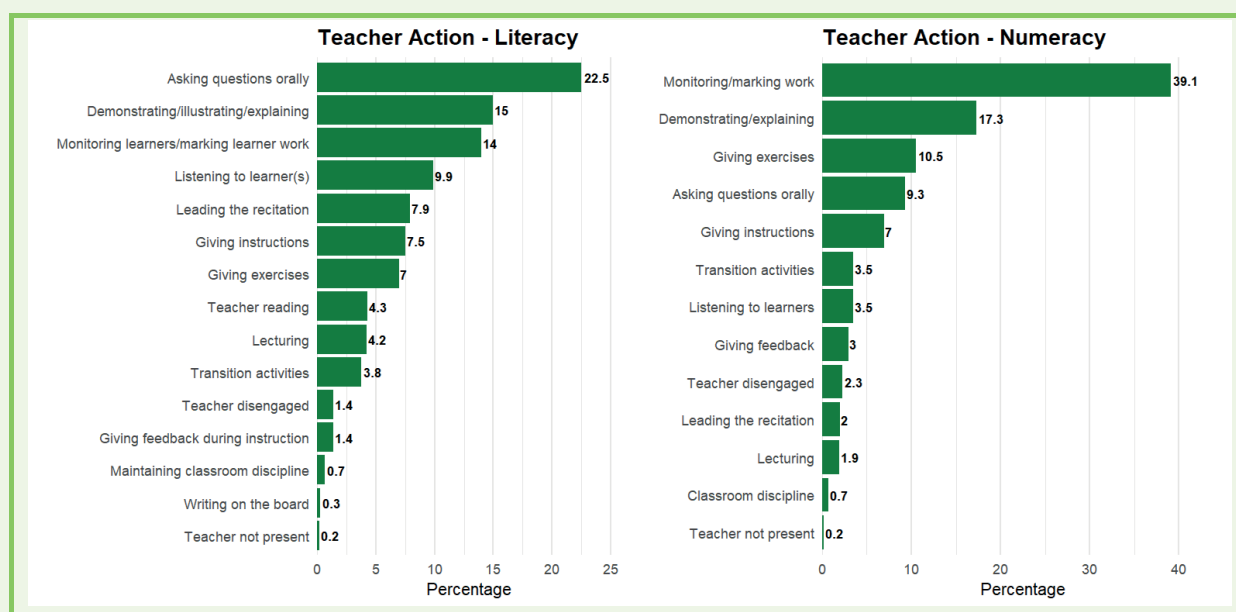
Teacher Actions

In numeracy, the most frequent teacher action was monitoring learners, accounting for 39.1% of the observed time, followed by demonstrating/explaining at 17.3% and giving exercises at 10.5%. These actions suggested a teaching style where the teacher primarily introduced a concept and then supervised learners as they worked, with a notable emphasis on observation and checking learner work.

In literacy, asking questions was the dominant teacher action, at 22.5% of the observed classroom time, followed by demonstrating/explaining (15.0%), and monitoring/marking learners' work (14.0%). This pattern indicated a more interactive, but whole-class style of instruction, with a focus on verbal questioning, used as a means of collective instruction or whole-class assessment.

Whereas the proportion of lesson time dedicated to the dominant teacher actions varied by learning area, there was a convergence in the implications. In both learning areas, the most frequent actions (monitoring learners, asking questions, and demonstrating/explaining) were characteristic of whole-class instruction pedagogical approaches, thus confirming the findings on teacher focus.

Figure 10. Dominant teacher actions in literacy and numeracy



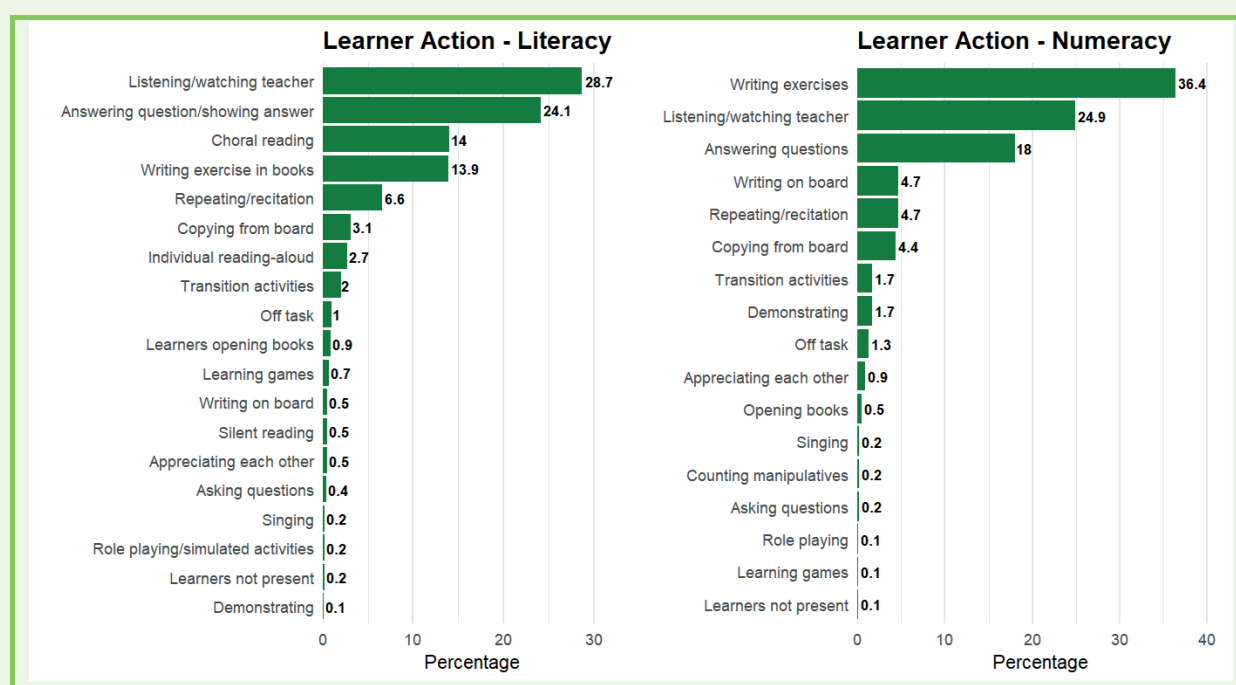
Teacher and learner action link

The observed teacher and learner actions create a coherent picture of the classroom environment, where teacher-led whole-class instruction drives reciprocal learner actions focused on writing and listening/watching the teacher.

In numeracy, where the dominant teacher actions were monitoring learners and demonstrating, the dominant learner actions were writing exercises (36.4%), followed by listening/watching the teacher (24.9%), and answering questions (18%). This pattern suggests a typical sequence of instruction where the teacher demonstrates/explains a mathematical concept, asks learners to write down their work or solutions, and then monitors them as they perform the task. Further, the high proportion of writing indicates that seatwork, copying, or practice exercises as the primary modes of learner engagement in numeracy, which enable the teacher to monitor the class and check for completion.

In literacy, where asking questions was the highest teacher action, listening/watching was the dominant learner action at 28.7%, followed by answering question/showing answer at 24.1% and choral reading at 14%. These findings suggest that despite the literacy lessons being interactive, they were highly collective, where the teacher posed questions to the whole class or demonstrated an activity, and learners collectively listened to the teacher, answered questions, or engaged in a cued recitation, aligning with the observed dominance of whole-class instruction.

Figure 11. Dominant learner action in literacy and numeracy lessons



Link between instructional content, teacher action and learner actions

The findings showed that the dominant instructional content was reading comprehension and pre-reading activities in literacy, and the resultant teacher

actions (asking questions) and learner actions (listening to the teacher and answering questions) can be situated in literature. Teaching and assessing reading comprehension requires the teacher to frequently ask questions to check for learners' understanding and guide them through a text. As a result, learners spend a high amount of time listening to the teacher's questions and explanations and answering or participating in choral reading. Evidence from classroom observation studies shows that direct teacher questioning, mainly implemented through recitation led by the teacher, is the most preferred and dominant approach for teaching reading comprehension (Parker & Hurry, 2007). This teacher-led approach is commonly referred to as guided reading, with the use of questions to check comprehension and encourage deeper thinking about the text to enhance understanding as a key characteristic of this pedagogical practice (Ford, 2015). While this highly verbal and interactive approach could ensure that the teacher checks for learners' reading and comprehension skills, it sacrifices the expected learner-centered focus on small-group work and collaborative reading strategies. This is particularly important considering that guided practice is most effective in small-group reading comprehension (Ford, 2015).

Evidence also posits that the type of questions asked has a key influence on learners' acquisition of literacy skills. Frequently asking high-challenge questions that require explanation, evaluation, or extension of the text in the response, as compared to low-challenge questions that focus on confirming or selecting answers from the provided text, has for instance, been shown to have a positive influence on language and literacy (Blything et al., 2020). Whereas this might not have been a focus of the study, this provides an opportunity for future research to better understand the type of questions teachers ask and their influence on the acquisition of literacy skills.

Similarly, evidence underscores the importance of frequent and explicit teacher–learner instructional interactions in the development of foundational skills. Explicit instruction, characterized by clear explanations, teacher modeling, scaffolded support, and structured opportunities for guided practice with feedback, is particularly effective for early grade learners. Teacher demonstrations, for instance, support the acquisition of early reading and mathematics skills more effectively than less-structured approaches such as discovery learning, highlighting the vital role of intentional, well-structured teacher guidance in building foundational literacy and numeracy competencies (Gunn et al., 2021). This could explain the dominance of

demonstration and monitoring learners by early-grade teachers in the numeracy classrooms.

2.3 Mechanism for decision making inside the classroom

This study sought to understand how early grade teachers decide on the teaching strategies to use during FLN instruction, and what drives their decisions. To achieve this, the study examined five observed teaching behaviors in FLN instruction. These were: giving encouraging feedback, use of small group or individual instruction, use of differentiated instruction, teacher engagement, and use of teaching and learning resources.

To understand why teachers make certain instructional decisions or what informs/drives their decisions, various individual teacher- and school-level predictor variables were examined, and their effect on the observed teaching behavior (treated in our analysis as the outcome variables) generated. Table 4 presents a summary of the findings.

Teacher and School Characteristics	Small-group focus	Teacher engagement	TLM use	Encouraging feedback to learners	Use of differentiated instruction
Age (in years)	0.143 (0.087)*	0.171 (0.089)*	0.140 (0.103)	0.004 (0.028)	-0.105 (0.049)**
Experience (in months)	-0.091 (0.086)	-0.174 (0.093)*	-0.156 (0.091)*	0.011 (0.032)	0.060 (0.041)
Gender (male)	0.058 (0.149)	-0.081 (0.120)	-0.073 (0.150)	-0.007 (0.038)	0.127 (0.068)*
Self-Efficacy	-0.020 (0.053)	0.000 (0.063)	-0.071 (0.058)	0.033 (0.022)	0.009 (0.029)
Attitude (stakeholders)	0.063 (0.076)	0.141 (0.071)**	0.191 (0.071)***	-0.004 (0.023)	-0.003 (0.031)
Attitude (Belief)	0.116 (0.082)	-0.097 (0.076)	-0.110 (0.075)	-0.020 (0.022)	-0.032 (0.034)
Norm	-0.166 (0.061)** *	-0.001 (0.060)	-0.023 (0.067)	-0.015 (0.022)	-0.007 (0.025)
Lesson Preparedness	-0.264 (0.050)** *	-0.089 (0.061)	-0.123 (0.061)**	-0.028 (0.020)	0.025 (0.028)
Class size	0.066 (0.057)	-0.003 (0.049)	-0.107 (0.047)**	-0.009 (0.014)	0.042 (0.024)*

TLM availability	-0.016 (0.061)	-0.050 (0.053)	0.049 (0.060)	0.041 (0.024)*	0.101 (0.041)**
School Facility Index	0.028 (0.076)	0.029 (0.096)	-0.007 (0.094)	0.014 (0.036)	0.038 (0.040)
Senior Support	-0.072 (0.131)	-0.078 (0.131)	0.103 (0.144)	0.014 (0.036)	0.117 (0.062)*

Note. Coefficients are SEM estimates of direct effects only, with standard errors in parentheses. The SEM was specified as a multiple-mediator model in which exogenous covariates were allowed to predict the mediating constructs of lesson preparedness, self-efficacy, attitudes toward stakeholders, attitude-based beliefs, norms, and TLM use, and the outcome was regressed on both these mediators and the exogenous covariates. This specification allows each predictor to influence the outcome both directly and indirectly through the mediating constructs. Indirect effects represent the portion of the association transmitted through the mediators, while direct effects represent the association that remains after accounting for the mediating pathways. Total effects are equal to the sum of the direct and indirect effects. Outcome variables are defined as follows: Small-group focus indicates the extent to which the teacher focused on individual learners or small groups rather than the whole class or other targets; Teacher engagement captures the degree to which the teacher was actively engaged during the observed session; TLM use measures the number of teaching and learning materials used during the session; Encouraging feedback captures whether the teacher provided encouraging responses to learners' correct or incorrect answers; and Differentiated instruction reflects the use of instructional strategies tailored to learners with different learning needs or levels.

Drivers for teacher focus during instruction

Findings from the regression model show that teachers who are more prepared ($\beta = -0.26$, $p < 0.01$) and those with stronger norms ($\beta = -0.17$, $p < 0.01$) spend less time on small-group and individual learner instruction, meaning they focus more on whole-class instruction, which is not the recommended instructional approach in CBE. Results further reveal that older teachers are more likely to focus their instruction on small-group and individual instruction ($\beta \approx 0.14$, $p < 0.05$) compared to their younger colleagues. This means that teachers' experience makes teachers appreciate the need for differentiated instruction.

Interviews with teachers provided more insights on why teachers choose a particular focus, say whole class, small group, or individual learner. Teachers at the foundational level preferred whole-class instruction to enhance understanding of concepts, boost classroom management, monitor learner understanding, and improve efficiency in the use of teaching and learning resources. Although minimally practiced, teachers were knowledgeable about the use of small-group and individual learner instruction.

- **Whole class instruction:** Teachers' narratives indicate that whole-class instruction was not used arbitrarily but was strategically utilized at particular moments in the

lesson cycle, in response to pedagogical, managerial, and structural considerations. Four overlapping decision logics emerge:

- **To foster delivery of new content:** Teachers consistently described whole-class instruction as essential during lesson introduction and initial explanation, especially when introducing new concepts or procedures. They highlighted that whole-class instruction ensures all learners are exposed to the same core concept.

"I will be keen on the whole class to ensure that all learners get the content of that sub-topic or that area to be covered." Teacher, Vihiga, Numeracy

- **To secure attention, discipline, and classroom order:** Teachers frequently linked whole-class focus as a behavior regulation strategy to manage learner attention, behavior, and discipline, particularly in large classrooms. Teachers thus decided on whole-class instruction when learners were inattentive or disruptive and when teachers needed to re-center focus and assert control, especially for young learners who are easily distracted.

"The reason I focus on the whole class is the attention of the learners in class. Some are very attentive, but we have others who are playing in class. That is what makes me focus on the whole class." Teacher, Narok, Numeracy

- **To monitor understanding and diagnose learning gaps:** Teachers described using whole-class instruction as a way to quickly gauge who has understood and who has not, especially through questioning, choral responses, and observation. Through whole-class instruction, teachers were able to conduct formative assessment by asking questions and identifying learners who need additional support. According to teachers, this was especially effective for large classes.

"Because as you teach, you are going to know the ones who have understood and the ones who have not understood." Teacher, Murang'a, Literacy

"When you engage the whole class, at least you know what percentage have understood." Teacher, Uasin Gishu, Literacy

"If there is a topic that the whole class has not understood, and when I ask a question, no one answers, I will have to go back and teach the topic again to make sure that they all understand." Teacher, Narok, Literacy

- **For efficiency in resource utilization:** Teachers explicitly referenced the availability of teaching and learning materials, class size, ICT use, and visiting resource persons as reasons for focusing on the whole class. They reported how limited teaching and learning materials necessitated them to demonstrate to the entire class rather than in groups, that ICT tools such as projectors needed a single focal point, and that resource persons (other teachers or external guests) invited to teach or demonstrate something could only teach the whole class.

"Another thing is that when I am using ICT, such as a projector, I focus on the whole class because everyone is looking at the same source. After explaining the concept to the whole class, I then go to the groups." Teacher, Murang'a, Numeracy

Even as teachers discussed the dominance of whole-class instruction, they also acknowledged that whole-class instruction has significant drawbacks, especially for slow learners and learner participation. Their reflections showed that the dominance of whole-class instruction was not due to a lack of awareness of its limitations, but rather, a strategy to negotiate between ideals, constraints, and classroom realities. They observed challenges like limited concentration in large classes, passive participation, and sidelining of slower learners in whole-class activities.

"... there is an advantage, because learners will focus on one area. But disadvantages are more. Most of the learners, don't even concentrate, and those who are slow learners, are not able to participate. For example, if I ask questions, they will not answer, because they will not talk, but when they are in groups, they can talk very well. So the shortcomings are more than the advantages...for example, you have like 60 pupils, so when they focus on one source, some of them may not be able to focus well, because they are many." Teacher, Murang'a, Numeracy

- **Small group instruction:** Although minimally practiced, discussions with teachers indicated that they were knowledgeable about the importance of small-group instruction. The use of small groups was not a default instructional approach. Narratives by teachers described several factors that would otherwise drive their decision to use small-group instruction. Key motivating factors identified included enhancing mastery of concepts, supporting struggling learners, promoting peer-to-peer learning to enhance understanding, facilitating hands-on activities, helping with classroom management, especially in moving around the classroom to check what learners are doing, implementing formative assessments, and sharing learning resources where there are not enough.

Enhance mastery of concepts:

"So, the small groups are effective because when I move around or when I walk around assisting learners in those groups, maybe those who did not understand when I was delivering the lesson will be able to understand. They will be able to ask questions, and I will be able to answer them according to the questions they have asked, making them understand more." Teacher, Vihiga, Numeracy

Support struggling learners:

"Now after I have taught everybody, you know when you ask the questions you will see that there is nobody carrying up their hand or there is nobody reading well. So after finishing, I give the work to other groups, then I attend the smaller group which was not with me." Teacher Kisumu, Literacy

"There are those whom I pair and those whom I put in groups. The time takers I pair them, those who are fast learners I put them in another group. I concentrate more on those who are time takers." Teacher Garissa, Numeracy

Peer support/learning:

"For the small groups, you arrange the learners into groups. The stronger learners sit together with the slower ones so that they can help them improve. Then you go around assessing the groups, and within the groups they are able to help each other." Teacher Uasin Gishu, Literacy

"We found that when you introduce pairing or grouping, learners can learn from others. They can work as a group, they learn from others, and because of that hands-on class, they are able to learn more than when the teacher just does it on the board." Teacher Vihiga, Numeracy

Sharing learning resources:

"During group instruction, for example, when learners are expected to complete an activity and the resources are not sufficient for everyone, you organize them into groups...you can give them to small groups or pairs so that every learner has an opportunity to access and use them" Teacher, Turkana, Literacy

In summary, group work was often utilized after the whole-class instruction, serving more as a strategy for targeted support, practice, reinforcement, and evaluation rather than as initial concept development. This sequencing suggests that group

work is primarily used for consolidation (towards the end of the lesson) and formative assessment. From a CBE perspective, this practice partially aligns with learner-centered principles, as it allows for peer learning, active participation, and formative feedback. However, the potential of group work as a core instructional approach was underutilized. While using group work after whole-class teaching supports understanding and differentiation, competence-based pedagogy encourages more sustained and intentional integration of group-based learning throughout the lesson, including during lesson development.

In addition, the findings highlighted two distinct forms of groupings that were utilized by teachers. On one hand, teachers utilized heterogeneous grouping by mixing learners of different abilities to allow for peer-to-peer support, where more able learners could support others through peer explanation. On the other hand, through homogeneous grouping, teachers grouped learners by their learning ability, particularly when they needed to provide targeted support to those with learning difficulties (time takers or extend activities for fast learners). The results further highlighted that heterogeneous grouping was more routinely applied. Teachers appreciated that through this approach, learners would not only reinforce their understanding while assisting their peers, but also that learners tended to understand explanations better when they came from peers.

- **Individual learner instruction:** Qualitative findings highlight various drivers that motivate teachers' use of individual learner instruction. The most cited were: the need to support learners who have not mastered the concept or content being taught, supporting learners with special needs or specific learning difficulties, and the need to monitor learners and provide corrective feedback. Individual instruction was therefore motivated by identified learning difficulties and not a planned design, meaning it was more of an adaptive strategy applied on a need-by-need basis.

Supporting learners who have not mastered the concept or content:

"I decide to engage with individual learners when I realize that, even after working in small groups, some learners are not able to understand the concept. After they have done the practice and I notice that some learners are having difficulty understanding it, I then move in to assist them individually" _ Teacher, Kisumu, Literacy

"Individual learners. These may be the ones who have problems. So, we deal with the individual learners during the free time. You look for the time, then you deal with them, you show them the way." Teacher Murang'a, Literacy

Supporting learners with special needs or specific learning difficulties:

"So, we have learners who are like, let me say, who have got special needs, maybe they have some difficulties, hearing impairment. So, these are the ones that require individualized teaching." Teacher Kisumu, Numeracy

"Well, since now I have known my learners, I know the time takers, I know the fast learners. After teaching them now, I take my time. I also have my IEP learners. I attend to them during my time, during lunchtime or even instead of going home at 12.40, the normal hours, we are just left with them up to 3.10. I handle them now individually." Teacher, Nairobi, Numeracy

Monitoring learners and providing corrective feedback

"Maybe I have asked that learner to come and do a question on the board, and after I see the learner has not done it well when I finish teaching, I will go to that individual learner, and I explain and show him/her how to work out that problem."

While teachers recognized the need for individual learner support for those with learning difficulties and special educational needs, the narratives showed that this support was often implemented outside formal classroom instructional time rather than embedded within it. For instance, teachers reported supporting individual learners during free time, at break time, after the lesson, or once whole-class teaching is completed, highlighting that the support was mostly provided as a remedial or follow-up activity. This finding suggests that although low teacher focus on individual learners was quantitatively reported during the lesson delivery, qualitative narratives reveal that teachers practice individual learner support beyond the lesson time.

Drivers of teacher engagement

Regression analysis shows that a teacher's age is positively associated with teacher engagement ($\beta \approx 0.17$, $p < 0.10$). This means that older teachers spent more time engaging a learner compared to younger ones during a foundational literacy or numeracy lesson. Inconsistent with teacher's age, teaching experience (measured in months) was negatively associated with teacher engagement ($\beta \approx -0.17$, $p < 0.10$), replicating a non-linear profile where mid-career teachers may be less engaged than either younger or older colleagues. In addition, teachers who have favorable attitudes toward stakeholders such as the CSOs and parents were more engaged during lesson instruction ($\beta = 0.141$, $p < 0.05$). Other predictors, including self-efficacy, norms, lesson preparedness, class size, TLM availability and senior support, show weak or null direct associations.

Drivers of providing feedback

Regarding providing feedback, the analysis showed weak direct associations between the examined predictors and providing encouraging feedback. The only predictor with a statistically small direct effect was availability of teaching and learning resources ($\beta = 0.04$, $p < 0.10$), suggesting that teachers in more resourced classrooms are more likely to use feedback that encouraged further effort.

Drivers of using teaching and learning materials during instruction

Findings show that teachers with a high attitude towards involvement of stakeholders ($\beta \approx 0.19$, $p < 0.01$), rate high in the use of teaching and learning resources. On the other hand, teachers who had more experience, those who were more prepared ($\beta \approx -0.12$, $p < 0.05$), and those teaching large classes ($\beta \approx -0.11$, $p < 0.05$) minimally utilized teaching and learning resources during instruction. There was no significant influence of the availability of teaching and learning materials and availability of school facilities on the use of teaching and learning resources. This finding suggests that availability of teaching and learning resources in the classroom or at the school does not predict or translate into their usage during lesson instruction.

During interviews with teachers, they shared their experiences on how availability or unavailability of teaching and learning materials influenced their teaching strategies. Two main themes emerged on how availability or lack of TLM influences teaching behavior.

- **Shift from theoretical to practical lessons:** The teacher narratives show that available resources bridge the gap between abstract concepts and reality. By using realia (real-world objects), teachers move away from theoretical explanations toward practical experiences that help learners grasp difficult concepts.

"Maybe when you have those materials, you know now they see the real things. So, you come with it, you show them maybe the thing you wanted to teach..." _Teacher, Murang'a, Literacy.

"It has made learning easier and real... challenges are minimal when using realia, because when you use technology, they are able to see that this is an ocean." _ Teacher Taita Taveta, Literacy

"Just like I told you before, when you now use these materials to teach, it makes learning more enjoyable and practical and real, and the learners, especially at a younger age, prefer using tangible objects..." _Teacher, Kisumu, Numeracy

- **Shift toward learner-centered pedagogy:** The availability of resources fundamentally changes the teaching strategy from a teacher-centered activity to a learner-centered activity. It encourages learners to be active participants through resource handling, counting, and creating, which increases engagement and reduces the teacher's talking time.

"The availability first of all saves my time. It makes me talk a little as they (teaching and learning materials) talk much on my behalf because it is something that a learner can hold, tangible..." _ Teacher, Garisa, Literacy.

"They help me to teach using the learner-centered method, and they make learning faster, because I do not have to spend time making the teaching aids..." _Teacher. Vihiga, Literacy.

"Most of the time the learners do the work by themselves. So if it is adding you just tell them to take the counters and do the activity, while you just guide them how to do it." _ Teacher, Taita Taveta, Numeracy

On the flip side, unavailability of teaching and learning resources makes teachers shift from the interactive, competency-based approaches in favor of teacher-centered approaches like the use of the lecture method, which they view as less effective.

"Sometimes that is when you use the lecture you were talking about. You just explain to them and if there is a picture in your book you show them." _Teacher, Makueni, Literacy.

"When they are not available, you find that it is like you are lecturing to the learners because they are not seeing anything; they are not understanding..." _ Teacher, Makueni, Literacy.

"(Without the teaching materials) The learners cannot see, touch, or relate to what I am teaching. If I am only using the lecture method, it becomes difficult for them to remember what I am teaching because they cannot see the actual thing." _ Teacher Vihiga, Numeracy.

Teachers also noted that the absence of teaching and learning resources creates an opportunity for them to improvise by creating their own resources or asking learners to draw counting objects on their books.

"So, when you don't have them, it is the time the teacher is going to improvise. So, because you have to teach, the teacher improvises, to teach whatever she or he wanted to teach." _ Teacher, Murang'a, Literacy

"If we don't have the real counters, we can use counters whereby the child will start drawing the counters himself/herself in the book." _Teacher, Uasin Gishu, Numeracy

Drivers of differentiated instruction

Age, gender, class size, senior support, and availability of TLM were found to influence use of differentiated instruction. While there was a negative effect with age, the other drivers reported a positive effect. The results suggest that male teachers ($\beta = 0.13$, $p < 0.10$), those teaching larger classes ($\beta = 0.04$, $p < 0.10$), teachers in schools with higher TLM availability ($\beta = 0.10$, $p < 0.05$), and those receiving senior support ($\beta = 0.12$, $p < 0.10$) were more likely to differentiate instruction, whereas older teachers are less likely to differentiate instruction ($\beta = -0.11$, $p < 0.05$). Lesson preparedness, teaching experience, and the psychosocial mediators did not show any significant direct effects on use of differentiated instruction.

In-depth interviews with teachers provided more insights into what informs the teachers' decision to use differentiated instruction. While some teachers were unfamiliar with the term differentiated instruction, many described using this instructional strategy during their lesson delivery. Five key themes emerge regarding what informs teachers' decisions to use differentiated instruction.

- **To support learners with special learning needs:** Teachers expressed that they mainly use differentiated instruction to cater for the varying levels of learner ability, including learners with special needs. Teachers decide to vary their instruction when they notice a gap between 'fast' and 'slow' learners, or when learners are not meeting the expected learning objectives.

"For the slow learners, I give them time. Enough time to do maybe the given activity which is to be done and even not as much as for the fast learners... I give them more time and less work." _ Teacher, Murang'a, Numeracy

"Maybe if you have learners in class that are special, let's say you have slow learners, you can give different work for them to do. Depending on the level of their understanding and ability." _ Teacher, Vihiga, Numeracy

"Some of these learners are living under difficult circumstances. For example, they are staying with guardians rather than their parents, and some do not even have anyone to make sure they have exercise books. So, I have to teach according to their level of need." _ Teacher, Marsabit, Numeracy

- **To help learners understand the concepts being taught:** Teachers often used differentiated instruction when their first teaching strategy did not yield the desired results in terms of understanding, mastery of the concepts, and achievement of the lesson learning outcome. Teachers for instance described how they would observe learners' reactions to a teaching approach they were using and make necessary changes when they realized that the learners were not following.

"I engage in those different instructions after realizing that the first instruction is not giving out the results. That is now when I can vary another way of giving instruction to the learner." _ Teacher, Kisumu, Numeracy

"If the other methods have not been effective, if the concept I have taught and I see most of the learners have not understood, that is the time I will change... by the middle of the lesson you will know that the approach you are using, you are on your own. So you can choose another strategy." _ Teacher, Taita Taveta, Literacy

"For you to achieve your objectives, you can't use one method. You have to vary the teaching methods... the reaction of the learners will tell you which is the best method issue." _ Teacher, Makueni, Literacy

- **Content and lesson context:** The nature of the subject matter (strand) or the specific activities planned for the day often dictates the need for different instructional approaches.

"It will depend on what I am teaching and also the method of delivery, because if I need to show (the learners something), then I need to demonstrate first. Then if it requires a lecture and asking questions later on, I use that approach. It depends on the content in that lesson." _ Teacher, Taita Taveta, Numeracy

"Depending on the area I am teaching and the strand I am teaching." _ Teacher, Kisumu, Literacy

- **To keep learners engaged and on task:** Teachers used differentiated instructions to maintain order, ensure cooperation, and keep learners engaged with the learning activities and lesson content.

"You can use that method when you see that the learners are not cooperating in class. You call a learner by name and ask, "Can you tell us where we are in the story? Which sentence are we reading? "Then from there you are going to know whether they are following the instructions." _ Teacher, Murang'a, Literacy

"For talented learners, maybe we have those that finish work very fast... we can give them more to keep them on task." _ Teacher, Vihiga, Numeracy

- **Assessment and feedback:** Differentiated instruction was used during formative assessment phases to evaluate the depth of a learner's knowledge by presenting the same concept or assessment task in various ways.

"That comes when you are doing an assessment. Instead of asking the same question in exactly the same way, I ask it differently. Learners should not expect the question to come exactly the way they heard it before. You can twist the question a little and then get a better idea of whether they understand the concept." — Teacher, Murang'a, Literacy.

"Differentiated instruction? I will use that (differentiated) instruction to help the learners to know if the content was covered well or not covered well." _ Teacher, Vihiga, Numeracy

Summary and discussion of findings on mechanisms for decision making

The results show that teachers' demographic indicators such as age, teaching experience, and gender have limited and inconsistent prediction of foundational teaching practices. It was established that more experienced teachers did not

uniformly exhibit superior teaching behaviors, perhaps because they become unenthusiastic with time. In addition, male teachers were only marginally better than their female counterparts in the use of differentiated instruction. This aligns with broader evidence from sub-Saharan Africa that traditional observable teacher background often poorly explains variations in instructional quality (Sitati et al., 2024). Sitati et al. (2024) found no broad advantage of one's sex in teaching performance, despite observing that having a female teacher significantly improved girls' test scores in math and reading (with no effect on boys). They concluded that such outcomes may be attributed to role-modeling and classroom dynamics rather than fundamental teaching skill differences between male and female teachers. The overall implication is that the teacher's age, tenure, or gender is a poor standalone predictor of effectiveness of teaching.

Consistent with the Integrative Model of Behavioral Prediction (IMBP), the results underscore the central role of psychosocial factors in shaping teaching behaviors. Overall, psychosocial factors had stronger and more systematic influences on teaching behavior than teacher demographic indicators. For instance, this study showed that teachers with high self-efficacy tend to have more effective teaching strategies without being constrained to a particular approach, whereas teachers with low self-efficacy may often adopt a more custodial, survival-oriented approach to classroom management. A meta-analysis of African studies concluded that teachers with strong self-efficacy more readily implement new instructional strategies and maintain engaging classrooms, thereby enhancing learner achievement (Muchena & Moalisi, 2018). Our findings therefore reinforce prior calls to build teacher efficacy through instructional leadership, coaching, and communities of practice, especially in early grade teaching.

We established that teachers' attitudes towards foundational teaching (measured in terms of beliefs about the importance of certain practices and perceptions of stakeholders' support for those practices) were strong predictors of teaching behaviors like use of TLM and providing engaging instruction. This resonates with previous research showing that positive attitudes toward learner-centered instruction correlate with greater use of such TLM. For example, Waigera et al. (2020) found that in Kenyan pre-primary classrooms, teachers who held positive attitudes towards instructional material use were far more likely to integrate teaching aids into

their lessons. These attitude-behavior linkages underscore that reform efforts in foundational learning must persuade and inspire teachers, not just train them.

Our results showed that normative beliefs negatively influenced almost all teaching behaviors. This finding echoes previous qualitative studies of Kenyan teachers, which often describe a prevailing school culture that prioritizes exam coverage over child-centered pedagogy. If the norms in a school discourage deviation from lecture-based routines, an individual teacher may feel constrained despite personal beliefs (e.g., some teachers who sensed a strong normative pressure to cover curriculum content were less likely to focus on slow learners or use interactive approaches). Conversely, when positive norms are established (e.g. the head teacher and peers all emphasize activity-based learning), it can propel widespread change. Literature on large-scale reforms highlights that changing the normative environment at schools is key to sustaining instructional improvements. In the national rollout of Tusome, for example, researchers noted that success involved “developing new normative structures and organizational relationships that intensify teachers’ motivation to adopt the new practices” (Piper et al., 2018).

2.4 Teacher mental health

Measures

This section reports findings from the mental health survey administered to grade 2 teachers in the same study schools. The results reported here are from the Patient Health Questionnaire-9 (PHQ-9) for depressive symptoms and the Generalized Anxiety Disorder-7 (GAD-7) for anxiety symptoms. Both tools are internationally recognized mental health screening instruments and have been widely applied in research and clinical settings. The GAD-7 was used to assess symptoms associated with anxiety, while the PHQ-9 was used to assess symptoms associated with depression over the two weeks preceding the survey. Teachers responded to a series of statements using a four-point frequency scale ranging from “not at all” to “nearly every day.” Higher scores indicated greater severity of anxiety or depressive symptoms. In addition to symptom assessment, the study qualitatively examined the extent to which these mental health symptoms affected teachers’ daily functioning, including work performance, home responsibilities, and social interactions. These two tools were selected since they have been used to screen for mental health

conditions in non-patient community-based populations, including teachers (Agyapong et al., 2024; Mokwena et al., 2026; Santos et al., 2025).

The total score for the PHQ was obtained by summing responses across all nine items, producing a possible range of 0 to 27. Standard cut-off points were applied to classify severity levels, with scores of 0-4 suggesting unlikely depression, 5-9 indicating mild depression, 10-14 moderate depression, 15-19 moderately severe depression, and 20-27 severe depression. Anxiety symptoms were assessed using the GAD-7, a seven-item measure that evaluates symptoms over the previous two weeks. Like the PHQ-9, each item was scored on a four-point Likert scale ranging from 0 (not at all) to 3 (nearly every day), resulting in a total score between 0 and 21. Severity categories were defined as threshold scores of 0-4 for minimal anxiety, 5-9 for mild anxiety, 10-14 for moderate anxiety, and 15-21 for severe anxiety. For reporting and analysis, depressive and anxiety symptoms were additionally converted into binary indicators using the established binary cut-off scores. Teachers with PHQ-9 scores of 10 or higher were classified as having depressive symptoms warranting interventional attention, while those below this threshold were classified as not having depressive symptoms that warrant interventional attention. Similarly, teachers with GAD-7 scores of 10 or higher were classified as having anxiety symptoms warranting interventional attention.

Prevalence of mental health symptoms among FLN teachers

The findings show an overall prevalence of depressive symptoms (PHQ-9) of 17.2%, and that for anxiety symptoms (GAD-7) of 8.6% with an overall (based on the binary indicator) mental health prevalence of 19%. The higher estimates for symptoms of depression than those for anxiety is consistent with findings from the literature, and the overall estimates may be weighed down by the wide coverage of study settings where underreporting is possible. This prevalence is based on reports of moderate to severe depressive or anxiety symptoms, described above. While males reported higher depressive and anxiety scores, the scores did not differ significantly by gender (13.0% vs 7.5%; $p=0.423$), although there were fewer males than females in the study.

A Kruskal–Walli’s test was conducted to examine differences in mental health scores across the 11 counties. The results indicated a statistically significant difference in mental health scores by county ($p < 0.05$), suggesting that the distribution of depressive and anxiety symptoms was not uniform in teachers from across the

different study sites. Descriptive analysis in *Table 5* further illustrates this variation, revealing a wide range of prevalence of mental health symptoms in teachers from across the study sites.

Table 5. *Depression, Anxiety and Overall Measures of Mental Health Symptoms for the Study Sample*

Measure	Category	n (%)	95% CI
PHQ-9 Depression Severity	Minimal	118 (53.4)	[46.8–59.9]
	Mild	65 (29.4)	[23.8–35.7]
	Moderate	27 (12.2)	[8.5–17.2]
	Moderately severe	9 (4.1)	[2.2–7.6]
	Severe	2 (0.9)	[0.2–3.2]
GAD-7 Anxiety Severity	Minimal	150 (67.9)	[61.5–73.7]
	Mild	52 (23.5)	[18.4–29.5]
	Moderate	15 (6.8)	[4.2–10.9]
	Severe	4 (1.8)	[0.7–4.6]
Mental Health	Minimal	139 (62.9)	[56.4–69.0]
	Mild	60 (27.1)	[21.7–33.4]
	Moderate	16 (7.2)	[4.5–11.4]
	Severe	6 (2.7)	[1.3–5.8]
Screening Outcomes	Anxiety	19 (8.6)	[5.3–13.1]
	Depression	38 (17.2)	[12.5–22.8]
	Mental-health Overall	42 (19.0)	[14.1–24.8]

Note. PHQ-9 = Patient Health Questionnaire-9; GAD-7 = Generalized Anxiety Disorder-7; CI = confidence interval

FLN teachers in Kisumu County reported the highest prevalence of mental health symptoms (depression and anxiety symptoms) at 36.4%. Better awareness of mental health in Kisumu, and the presence of sociodemographic biological risk factors may explain the high reported prevalence. In contrast, the lowest reported prevalence levels were observed in Marsabit County, where 5.6% of teachers screened positive for mental health conditions. In Garissa County, no teachers met the threshold for moderate or severe depressive or anxiety symptoms, indicating minimal levels of reported depressive and anxiety symptoms among teachers in that region. This is

likely a culturally influenced finding, as these are both Northeastern counties, where there may be under-reporting because of acquired resilience due to exposure to adversity from living in arid and semi-arid areas. *Figure 12* shows the prevalence of mental health conditions among early grade teachers by county.

Figure 12. *Prevalence of Mental Health Symptoms Among FLN Teachers by County*

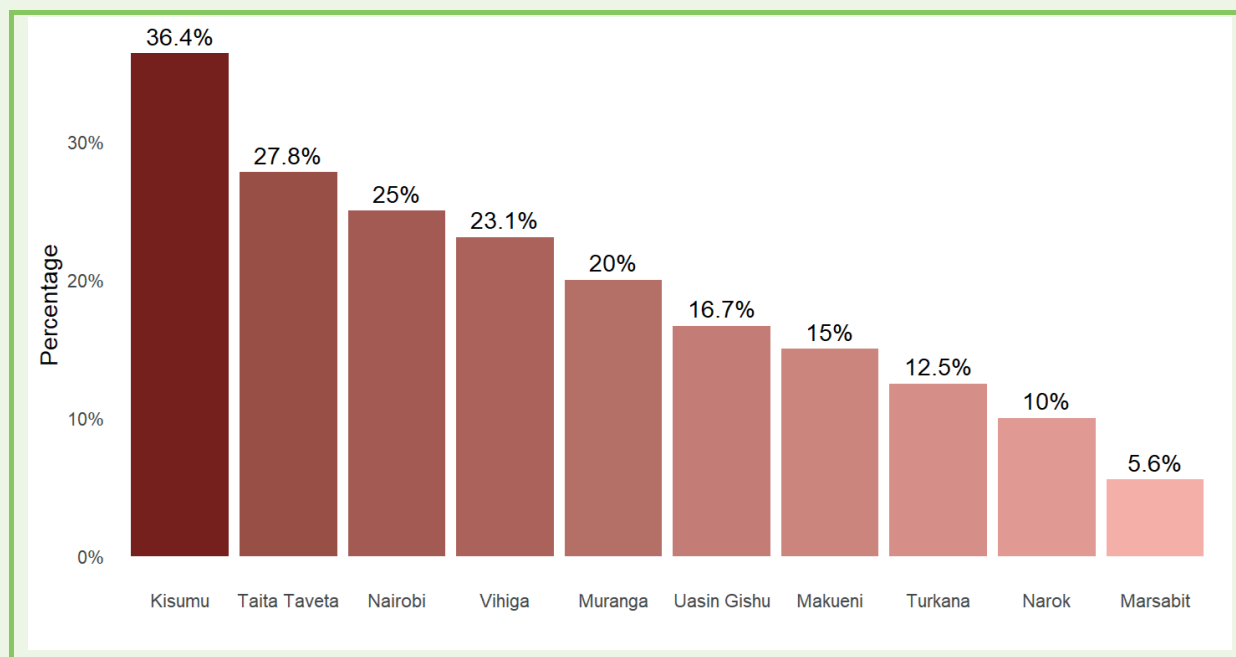


Table 5 shows various levels of mental health conditions using our various measures and threshold cut-off scores. Of importance to note is the exposure of an FLN teacher with moderate and above mental health symptoms to young learners (majority below 8 years old) who are under her/his sole care during schooling hours. Literature shows that mental health conditions among teachers may affect the quality of teaching and classroom interactions, consequently impacting negatively on the learning and mental wellbeing of children (Xu et al., 2025; Maricutoiu et al., 2023).

Table 6 shows county level data of the number of children (using grade 2 'G2' class in column X1 based on enrollment data from the institutional questionnaire) exposed to an FLN teacher who exhibits self-reported overall mental health condition of moderate to severe level. Since a G2 teacher was a 'representative' of the primary school early grades (G1 to G3) that focus mainly on developing FLN skills, we extrapolate the exposure to the entire FLN learners (G1-G3) in column X2. Column X2 shows the potential exposure that could have devastating effects (based on literature) on FLN learners, in grades 1 to 3, and/or instructional delivery implying the need for early intervention to minimize possible adverse effects of undesirable

mental health conditions. In column X3, we extrapolate the exposure to the entire FLN learners in the entire county.

Table 6. County Level Data of the Number of Children Exposed to an FLN Teacher Who Exhibits Mental Health Symptoms

County	Number of Teachers Surveyed	Prevalence (%)	X1 (G2)	X2 (G1–g3) In Sampled Schools	X3 (G1–g3) In County
Kisumu	22	36.4	297	920	21,348
Taita Taveta	18	27.8	175	554	6,076
Nairobi	32	25.0	580	1,759	13,879
Murang'a	20	20.0	117	372	14,108
Uasin Gishu	18	16.7	85	259	13,818
Vihiga	26	15.4	99	317	14,205
Makueni	20	15.0	51	170	17,029
Narok	20	10.0	77	253	28,040
Turkana	16	6.2	52	154	22,152
Marsabit	18	5.6	44	135	6,623
Garissa	11	0.0	0	0	10,156

Note. Prevalence shows the proportion of teachers who reported either moderate/severe anxiety or moderate/severe depression.

Association between mental health and teaching behavior

Figure 13. Associations Between Mental Health and Teaching Behavior

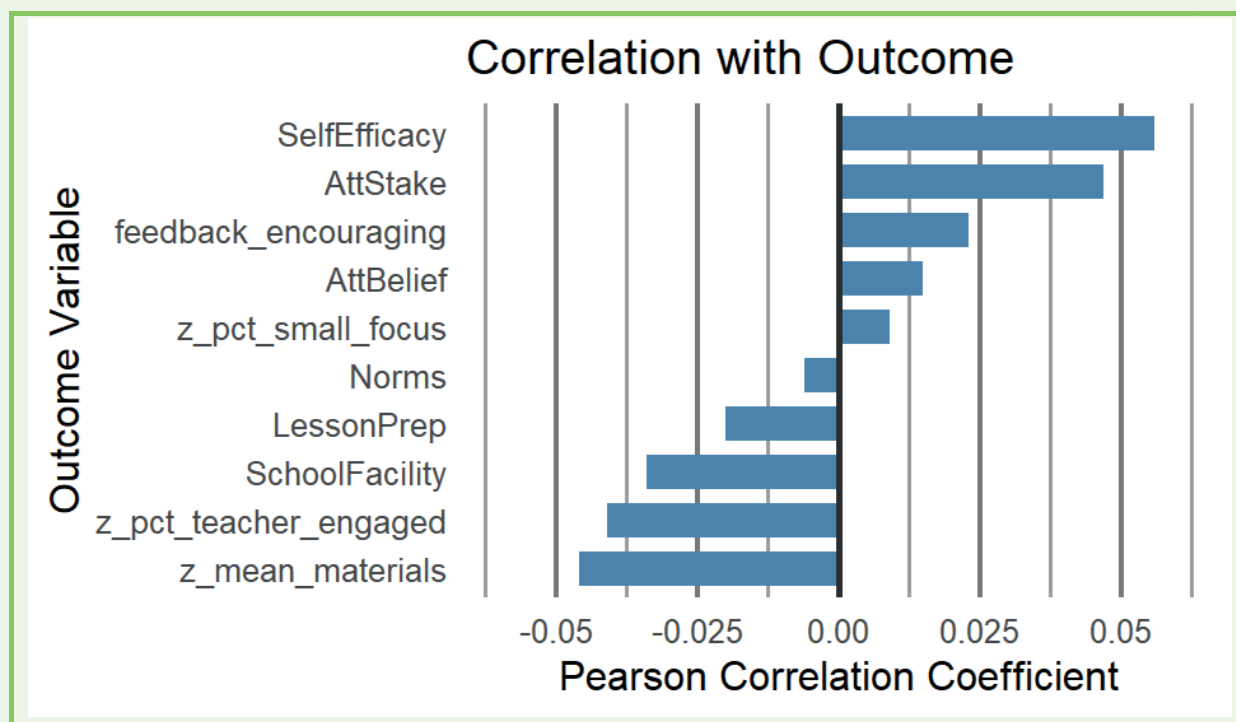


Figure 13 shows the relationship between mental health and teaching behavior. The findings show weak to negligible associations with coefficients ranging from -0.05 to +0.05. Positive but weak associations are noted between teacher mental health and teacher self-efficacy, teacher attitude to stakeholders and encouraging feedback, meaning that improved teacher mental health enhances their self-efficacy, attitude to stakeholders and their ability to provide encouraging feedback to learners. On the other hand, negative but negligible associations are noted with teacher engagement and use of teaching and learning materials, meaning higher mental health scores reduce a teacher's level of engagement and use of teaching and learning materials during the lesson.

Explanations for the prevalence of mental health conditions among FLN teachers

Narratives from in-depth teacher interviews revealed that teachers experience stressors related to financial burden and family challenges, in addition to teaching-related workload. High financial burden was the dominant reported cause of teacher mental health conditions, followed by workplace pressures such as large class sizes and scarcity of teaching and learning resources. The third most cited cause was

domestic family issues such as marital conflicts. The other cause of teacher mental health concerns was teacher delocalization (working far away from home), suggesting isolation from family and loss of social capital.

- **Financial burden:** This was the most dominant theme on the reported causes of mental health issues among teachers. Teachers noted that even with salary increments, high taxation and the cost of living make survival in urban and arid and semi-arid settings difficult. Many references were made to 'empty pay slips' due to loans taken for family needs. Teachers also noted that they were struggling to finance the education of their own children despite them being educators, which can be embarrassing among the teacher peers or in society.

"The stress is caused by the high cost of living. I have many responsibilities. I am taking care of a sick person, I have children whose education I need to pay for, and even when the salary is increased, the taxes are too high. All these issues are stressful for a teacher."

- Teacher, Taita Taveta, Literacy

"Financial instability means that you may be having pupils in school who need school fees, you need money to satisfy your needs and the money we are being paid as teachers is not enough. If you don't budget well you will incur loans and that will make you mentally ill."

- Teacher, Makueni, Literacy

"You find that a teacher has taken a loan, a big one, and now the money that is left in the pay slip is so little even to cater for the daily needs... the teacher is emotionally unstable."

- Teacher, Turkana, Numeracy.

- **Workplace pressure and burnout:** Teachers are overwhelmed by large class sizes (managing up to 75 learners), heavy learner assessment workload, and the pressure of transition years (e.g., Grade 3 Kenya Early Years Assessment (KEYA). A lack of resources, such as tattered or insufficient textbooks, adds to daily frustration and exhaustion. In addition, teachers feel a sense of failure or "anxiety" when learners do not understand the content, particularly in transition grades like Grade 1 or 3.

"Because, for example even handling the 75 learners before the end of the day, I am really tired. Honestly very tired... Overworking because of the learners, marking the books, the noise you feel as if your head is going to burst." - Teacher, Nairobi, Numeracy

"During exams, you know grade three is a transition class, so it is a bit hectic... being one person and you have a lot of learners, it is a bit exhausting. So, sometimes, even marking, marking is hectic." - Teacher, Murang'a, Numeracy

"Those literacy books are tattered. That is where the stress comes in when giving them out. If you want to teach a particular topic, you may find that only 10 copies have that topic." - Teacher, Kisumu, Literacy

"When they come to grade one, you find that these children have forgotten everything. So when you enter that class, you wonder where you are going to start from. At the end of the day, you find that you are strained." - Teacher, Uasin Gishu, Literacy

- **Domestic challenges:** Teachers pointed out that family-related challenges contribute to their psychological stress, and overall mental well-being. Domestic violence, marital conflicts, and the burden of caring for sick relatives or grieving the loss of loved ones significantly influence their mental well-being. Some teachers described the emotional labor of hiding their trauma while in front of learners.

"For those who are married, maybe they have children, and they have no money... you find that now many teachers, even they are committing suicide because of what they are going through in their homes. You find that now they fight; let me talk of fighting in their marriages." - Teacher, Turkana, Numeracy.

"Maybe they have issues with their spouses, they are struggling, they cannot cope with their spouses, or maybe they fought. You know, there are very many issues surrounding mental illness." - Teacher, Kisumu, Numeracy.

"I was able to hide my emotions when I was teaching... in my class, I put on another face to show that I am okay. But behind the scenes, I could cry a lot." - Teacher, Turkana, Numeracy

Influence of mental health on teaching behavior

Even though minimal associations were reported between teacher mental health and teaching behavior in the quantitative analysis, qualitative interviews with teachers reveal that mental health issues among teachers affect their teaching. Teachers'

narratives suggest four ways in which poor mental health among teachers affects their pre-lesson and during-lesson practices.

- **Disruption of lesson preparation and delivery:** Teachers reported that mental health issues affected their lesson preparation due to the associated emotional stress. When teachers are overwhelmed by domestic issues, financial burden, family illness, or grief, they lack the mental stability and concentration required to consistently act professionally. This results in missed lessons or missing lesson plans, and unprepared teaching and learning resources. In addition, mental health challenges lead to absenteeism, which is a significant barrier to efficient use of school hours and consistent lesson attendance. Teachers reported missing school days, skipping lessons, and leaving school early. Even while at school, instructional time is lost due to distractions such as making personal phone calls. By implication, this denies learners an opportunity to learn.

If the teacher is stressed, ...I think the teacher himself cannot prepare well for those lessons ... Maybe he cannot even prepare what is supposed to be prepared for those learners, the teaching aids, the lesson plans. _Teacher, Marsabit, Numeracy

"It affects my work because, due to the issues I have, I am sometimes unable to prepare my lesson plans. Most of the time, I only plan the first two lessons for the morning, but not the others. So, generally, the work becomes stressful." _Teacher, Taita Taveta, Numeracy

"You just see that they don't feel, they don't look good. They are restless all the time. You see them walking up and down. They are on the phone all the time, or some say they are sick. But if you follow that sickness, you find that it was stress. Instead of them leaving their domestic issues at home, they bring them to school and bring their stress to class. That day the children will not be taught. That is the challenge of being stressed at work." _Teacher, Uasin Gishu, Literacy

"Once you are stressed, teaching does not flow well. You may just be teaching for the sake of teaching. Every few minutes your mind is elsewhere, and the learners may not master the content because the lesson time is not used effectively. Sometimes you may not come to school every day, or you may teach only a few lessons in the morning and then stop. At other times, you may just sit because of stress. As a result, the learners go without being taught, and some lessons are not covered. We are not allowed to use corporal punishment, but because of the stress, you may do something that you are not supposed to do." _Teacher, Kisumu, Numeracy

- **Decline in quality of lesson delivery:** Discussions with teachers showed that when teachers experienced mental health issues, the quality of lesson delivery went down. The findings revealed that anxiety and depression led to a shift from learner-centered learning to passive, lecture methods or total inactivity. Teachers described being physically present, but emotionally disengaged. For example, they may give work just to keep learners busy while they sit in silence or deal with personal matters on their phones.

"I think the delivery of the lesson can end up not... the objective of the lesson is not achieved because the teacher is stressed.... I think he can deliver little to the learners. Maybe he cannot even prepare what is supposed to be prepared for those learners, such as the teaching aids and the lesson plans. A stressed teacher cannot perform in the class, according to my view." _Teacher, Marsabit, Numeracy

"For example, the teacher may be supposed to teach a new word, but you find that they are not doing anything. The class may be making a lot of noise, and when you go into the classroom, you find the teacher there. When you ask what the problem is, the teacher does not respond. So, it affects teaching a lot because the lesson does not go well." _Teacher, Murang'a, Literacy

"When a person is stressed, it means most of the time during his lesson, he will just be in class physically, but he is not teaching. He will just go to the class, give some work to the learners, yet the learners are not familiar with the work. So you find everything is chaotic in the class." _Teacher, Nairobi, Literacy

"The teacher is not even willing to take the learner for PE (physical education) lessons. They tell them to just go and play outside. And sometimes they use the lecture method. They give the learners work and ask them to just do the work." _Teacher, Vihiga, Literacy

- **Negative shift in classroom interaction and emotional climate:** Mental health issues significantly alter how teachers relate with their learners, often replacing warmth with irritability or detachment. Teachers noted that stress causes their temper to flare up, leading to harshness or even corporal punishment. In addition, some teachers withdraw emotionally, losing their jovial mood and ability to provide encouraging feedback to learners.

"Sometimes it is bad because even when a learner annoys you, you feel your temper flaring high, so the only thing you can do is to move away so that you avoid hitting them. You know we are human beings, we cannot pretend when something is eating you. _Teacher, Taita Taveta, Literacy.

"If a teacher is moody for that particular day, a learner doesn't know what is happening, ... So he or she comes and tells the teacher, "mark for me this activity", and the teacher is like, "leave me alone", so you see that creates a gap between the teacher and the learner." _Teacher, Marsabit, Numeracy.

"...when I am in my sober mood, I like recognizing (learner effort). Every time they raise a hand to say something, I always say, clap for her, well done, well done. But now, when you are emotionally low, you feel you don't even want to hear the claps." _Teacher, Turkana, Numeracy

"How they relate with the learners, they don't show love." _Teacher, Vihiga, Literacy

Summary and discussion of findings on mental health

The quantitative analysis showed mental health problems were common among the teachers, occurring in 19%, which is similar to estimates from other settings, where this ranges from 10-50%. The prevalence did not differ according to sex, implying that any teacher can be affected. The differential occurrence of mental health problems by county is interesting, considering that it was as high as 36% in counties like Kisumu and no reports of teachers reaching the problematic threshold in Garissa County.

The high prevalence of mental health problems among teachers from Kisumu and Taita Taveta may be a reflection of better awareness about the problems, although the contribution by environmental, socioeconomic and school-related stressors cannot be ruled out. For instance, substance abuse is common in Taita Taveta, while neuroinfectious are common in Kisumu, with both implicated in development of mental health problems. The quantitative study was not designed to identify factors associated with mental health problems, but the influence on teaching behavior was undertaken at the school level. At this school-level analysis, a positive correlation of mental health scores with self-efficacy of the teacher is unsurprising since self-efficacy promotes job satisfaction and self-belief that can reduce psychological distress (Von-Muenchhausen, 2021).

The negative correlation of mental health problems with better resourced schools was surprising, as such schools would be expected to be well resourced in mental health promotion. It is plausible the work demands to adhere to procedures in such schools e.g. on curriculum implementation and strict supervisions may psychologically overwhelm some teachers. The assertion was corroborated by findings from the qualitative follow up study where work related pressures were reported as some of the drivers of mental health problems, in addition to financial difficulties and domestic struggles.

During the qualitative interviews the teachers also observed that the mental health problems negatively affected lesson preparations, level of interaction with learners and absenteeism, findings which should be established in well powered future studies. These findings underline the need to create awareness about mental health in schools, through sensitizations and mental health literacy programs, and strengthening of capacity for identification, prevention and care or support strategies for mental health within schools.

2.5 Legacies of FLN interventions

Observed instructional legacy of past FLN interventions

This study sought to explore the extent to which instructional practices promoted through previous foundational literacy and numeracy (FLN) interventions remain evident in current classroom practice. This information is important in informing future FLN programming and decisions regarding the frequency and focus of teachers' continuous professional development. To examine this, teachers' reported exposure to past and ongoing reforms and interventions, such as CBE, Tusome, and KPLP, was compared with observed classroom practices.

Because some intervention categories had very small numbers of teachers reporting exposure, the intervention variable was collapsed for comparative analysis. Specifically, TaRL, PREIDE, and other reported training were combined into a single residual category labelled other low-frequency interventions. Teachers who reported no prior in-service training were retained as a separate comparison group because they constituted a substantive category. The final analytical groups were therefore CBE, Tusome, KPLP, other low-frequency interventions, and no in-service training.

Table 7 reports the frequency with which teachers exhibited specific instructional behaviors during classroom snapshot observations, disaggregated by the grouped intervention categories. Teachers were distributed across the categories as follows: CBE (n=157), KLP (n=88n), Tusome (n=74n), no in-service training (n=47n), and other low-frequency interventions (n=24n). For indicators expressed as proportions, each cell presents the mean share of snapshots in which the behaviour was observed. For count- or scale-based indicators, including use of teaching and learning materials, teacher support, ICT integration, and effective teaching, each cell reports the mean level observed per lesson or the average score on the respective measure. Higher values therefore indicate aspects of past FLN interventions that are more strongly “traceable” in current foundational learning classrooms, highlighting which legacies of each program teachers have retained in their day-to-day practice.

Table 7 Observed Instructional Legacy of FLN Interventions, by Prior In-service Training Category						
Behavior / legacy indicator	CBE	KLP	Tusome	Other interventions	No in-service training	Kruskal–Wallis p-value
Teacher focus (small-group / individual focus)	0.233	0.244	0.207	0.288	0.218	0.441
Teacher engagement	0.775	0.780	0.729	0.773	0.734	0.101
Learner engagement	0.527	0.532	0.502	0.551	0.525	0.890
Use of TLM	2.020	2.298	1.990	1.957	1.907	0.031
Use of differentiated instruction	0.682	0.750	0.676	0.750	0.809	0.392
Giving encouraging feedback	0.892	0.898	0.878	0.917	0.745	0.077
Teacher support / mentorship	1.962	2.000	2.054	1.250	1.064	0.001
ICT integration	0.064	0.045	0.068	0.042	0.021	0.784
Effective teaching score	-0.011	0.145	-0.085	-0.139	-0.333	0.012
N	157	88	74	24	47	

Descriptively, teachers who reported exposure to KPLP showed the highest mean use of teaching and learning materials and the highest average effective teaching score. Those reporting exposure to Tusome recorded the highest level of teacher support and mentorship. Teachers with no in-service training generally showed lower average values on several indicators, including effective teaching. Teachers reporting exposure to CBE training tended to occupy a middle position across most measures, while those in the other low-frequency interventions category did not consistently differ descriptively from the larger intervention groups. ICT integration remained low regardless of the reported intervention exposure.

Formal significance testing showed that not all descriptive differences were statistically distinguishable. Omnibus Kruskal–Wallis tests indicated significant differences across intervention categories in teacher support and mentorship ($p < 0.001$), effective teaching score ($p = 0.012$), and use of teaching and learning materials ($p = 0.031$). Variation in encouraging feedback was marginal ($p = 0.077$). By contrast, differences in small-group focus, teacher engagement, learner engagement, differentiated instruction, and ICT integration were not statistically significant.

Pairwise comparisons further clarified the source of these differences. For effective teaching, the only statistically significant pairwise difference after adjustment for multiple testing was between teachers reporting exposure to KPLP and those reporting no exposure to in-service training, with the former recording higher effective teaching scores. For use of teaching and learning materials, pairwise differences did not remain statistically significant after adjustment, although teachers reporting exposure to KPLP showed descriptively higher values than several other groups. Taken together, these results suggest that the strongest associations with teachers' reported intervention exposure histories were observed in instructional effectiveness, teacher support, and, to a lesser extent, material use, rather than in all learner-centered practices more broadly.

Overall, the evidence points to selective rather than broad-based instructional legacies. Teachers reporting exposure to KPLP showed the clearest descriptive advantage in use of teaching and learning materials and effective teaching, while those reporting exposure to Tusome reported higher levels of teacher support and mentorship. Teachers with no in-service training tended to perform less favorably on some indicators, particularly effective teaching. However, the lack of significant

group differences in small-group focus, learner engagement, differentiated instruction, and ICT integration suggests that many of the learner-centered practices promoted across FLN reforms have not been retained in a strongly differentiated way across intervention histories.

Cross-tabulation of observed teaching behaviors by period of last in-service training

The study findings showed that of the 398 teachers, 72.1% of them reported attending both literacy and numeracy in-service training in the last 10 years, while 13.3% and 2.8% of teachers attended only literacy or numeracy training, respectively. About 11.8% of the observed teachers reported not attending any in-service training.

To further understand the legacies and how past FLN interventions influence current instructional practices in foundational classes, a cross-tabulation of observed teaching behavior and the time when the teacher received the most recent in-service training was conducted. This analysis sought to determine whether the recency of professional development was associated with differences in the expected pedagogical behaviors promoted through previous FLN reforms and interventions. . Table 8 highlights the proportion of observed teacher behaviors and practices based on the recency in-service training exposure prior to the study.

Table 8 . *Cross-tabulation of Observed Teaching Behaviors by Most Recent In-service Training*

Behavioral Indicator	[0–2] years	[2–5] years	[5+ years	Never trained
Small group / individual focus	0.234	0.224	0.260	0.218
Teacher engaged (facilitation, monitoring, feedback)	0.763	0.765	0.800	0.734
Active learner participation	0.531	0.486	0.543	0.525
Mean number of TLMs used	2.13	1.93	1.94	1.91
Differentiated instruction used	0.721	0.732	0.528	0.809
Encouraging feedback provided (correct & incorrect)	0.908	0.929	0.722	0.745

Teachers' focus on small groups and individual learners remained consistently low across all groups of teacher in-service training, ranging only from 0.218 (Never trained) to 0.260 (5+ years). This means that, regardless of the in-service training, the persistent focus on whole-class instruction remained dominant, implying that there could be other reasons beyond teacher training that limit the use of learner-centered approaches.

The findings also revealed slight variations in teacher engagement, which includes facilitating, monitoring learners, and providing feedback, across the timing of in-service training. Teachers trained over 5 years ago showed a slightly higher engagement level at 0.800 compared to those trained 2-5 years ago at 0.765, those trained within the last 2 years at 0.763, and those who never attended an in-service training at 0.734. The consistently high engagement levels suggest that teacher engagement may not necessarily depend on in-service training or how recent it is.

Active learner participation remained moderate and relatively stable across all groups between 0.486 to 0.543, implying that in-service training seemed to have little effect on increasing the proportion of active participation.

The mean number of teaching and learning materials used in the observed classrooms was consistently low across all groups, ranging from 1.91 to 2.13. Teachers using an average of around 2 TLMs indicates that the timing of in-service training does not significantly influence the number of materials used. Rather, this low usage may have been a result of resource availability or institutional norms. For instance, expectations that teachers must complete comprehensive professional documents, such as schemes of work and lesson plans, may consume the time that would otherwise be used for creating or gathering improvised TLMs. Further, the perceived pressure to finish the curriculum on time may lead teachers to rely on the most direct method of instruction, such as whole-class instruction using standard TLMs like textbooks and chalkboards.

The correlation between teacher in-service training and use of differentiated instruction showed inconsistent results. Teachers who had never received in-service training demonstrated the highest use of differentiated instruction in their classrooms at 80.9% compared to 72.1% of teachers who had received training 0-2 years (72.1%) and 2-5 years (73.2%) prior to the study. These results could suggest

that formal in-service training may not be the only facilitator for acquisition of this complex behavior.

Provision of positive feedback for both correct and incorrect responses in a manner that encouraged further effort was highly correlated with the recency of teacher in-service training. Over 90% of teachers who had received training 0-2 and 2-5 years prior to the study demonstrated the highest proportions of encouraging feedback, compared to teachers who had received training 5+ years before (72.2%) and those who had never been trained (74.5%).

Reasons for low ICT integration in teaching and learning

Qualitative data from interviews with teachers further explains why there is low usage of ICT. Five key themes emerge regarding why teachers in Kenya minimally integrate ICT in their FLN lessons. The reasons cited by teachers range from infrastructure to technical skills gaps.

i) Infrastructural and technical barriers: The most prevalent theme was the lack of reliable infrastructure. Teachers frequently cited power outages, poor charging systems, and unstable network connectivity as primary reasons for avoiding ICT.

"In our school for a whole year we never had electricity. It came two weeks ago, imagine, since 2023 December... we have solar here, we are a bit low on ICT unfortunately."
_Teacher, Makueni, Literacy

"This school, the area where I am, the network is very bad. Unless I take the learner where the network is good, then I can use my phone." _Teacher, Taita Taveta, Literacy

ii) Inadequate or non-functional ICT Resources: Teachers reported shortage of functional gadgets. Many of them indicated that the tablets provided by the government or NGOs have broken down, have dead batteries, or are simply insufficient for large class sizes.

"You find only two or three functional tablets in an institution... some gadgets have broken down, and their batteries are not working well ever since they were brought many years ago." _Teacher, Kisumu, Numeracy

"If I even use a phone, maybe I only use one, and I am handling 40 learners. It will be a challenge... even if I use a laptop, it's only one." _Teacher, Vihiga, Numeracy

iii) **High cost associated with digital pedagogy:** Teachers often have to dip into their own pockets to facilitate digital learning. The high cost of mobile data (bundles) and the lack of school-provided Wi-Fi create a personal financial burden that discourages regular integration.

"The main issue is buying the bundles, so that is why it is difficult to integrate... the teacher is forced to use their own bundles, and this is hard because Safaricom has raised their rates." _Teacher, Taita Taveta, Literacy

"Most of the parents have no smartphones, and when they have, we hear they need bundles. So we rarely incorporate the use of ICT." _Teacher, Vihiga, Numeracy

iv) **Time management and instructional efficiency:** Integrating ICT is often viewed as time-consuming. Teachers pointed out that it takes up lesson time due to the logistics of setting up equipment or trying to show a single small screen to many learners.

"It is challenging because, for example, moving around with the phone showing every learner takes a lot of time. It eats up the lesson. It is such an effort." _Teacher, Nairobi, Numeracy

v) **Teacher capacity and training gaps:** Many teachers reported low skill levels on use of technology. In some schools, the entire ICT program depends on a single 'expert' teacher.

"If the teachers do not know how to operate ICT, it is a problem... Only one teacher was trained. The whole school has one expert, so we require him to do it for us. So if he is not available that day, we will not use ICT." _Teacher, Garissa, Numeracy

"And even the training. Maybe I myself, maybe I don't have enough training on that ICT integration." _Teacher, Vihiga, Literacy

3.0 Conclusions, recommendations and future research

3.1 Conclusions

Instructional practices and pedagogy

- Persistent dominance of teacher-centered approaches: Despite the shift toward learner-centered pedagogy in policy, whole-class instruction remains the dominant reality in foundational classrooms, accounting for 84.5% of lesson time in literacy and 62.8% in numeracy.
- Passive learner engagement: Learner actions are largely repetitive or passive; learners spend the majority of lesson time listening to or watching the teacher (28.7% in literacy) or writing exercises (36.4% in numeracy).
- Rational decision-making under constraints: Teachers choose whole-class instruction as a deliberate strategy to manage large class sizes, secure learner attention, and maximize efficiency when using limited resources.
- Underutilization of individualized support: While teachers recognize the need for individualized instruction, it is often treated as a reactive, remedial activity performed outside official classroom hours (e.g., break time or lunch) rather than embedded in lesson design.
- Teacher support and mentorship are critical enablers of effective practice: Teacher support and mentorship (e.g., through CSOs, coaching, and school leadership) were strongly associated with improved instructional practices and increased use of learner-centered strategies.
- Overall access to approved foundational learning textbooks was generally adequate, with most schools reporting fewer than two learners per textbook. However, significant county-level disparities persist, with counties such as Marsabit experiencing higher learner–textbook ratios that may limit equitable access to instructional materials. In addition, a substantial proportion were in fair or poor condition, indicating wear and tear that could compromise their effectiveness in supporting teaching and learning
- The "resource paradox": The availability of teaching and learning materials (TLMs) does not guarantee their use; more experienced teachers were found to

use materials minimally, possibly due to a perceived efficacy that relies on theoretical delivery.

Teacher Wellbeing and School Climate

- Teacher mental health: Approximately 19% of FLN teachers experience moderate to severe mental health conditions, primarily driven by high financial burdens, workplace pressures, and domestic challenges.
- Influence on quality of instruction: Poor mental health leads to classroom disengagement, increased absenteeism, and a negative shift in the emotional climate, where warmth is replaced by irritability or detachment.

Legacies of Past Interventions

- Selective instructional legacies: Past programs have left distinct but selective traces. Teachers reporting exposure to KPLP demonstrated the clearest advantage in instructional quality, recording the highest Effective Teaching Score (0.145) and the highest mean use of Teaching and Learning Materials (2.3 resources). Those reporting exposure to Tusome reported higher Teacher Support and Mentorship, leading with 2.05 sessions per term. Broad learner-centered goals, such as ICT integration and individualized focus, have not yet been retained as distinct behaviors by any one group.
- Training matters: Teachers with no in-service training perform significantly less favorably, particularly in Effective Teaching, where they scored -0.333, below the group average.
- Impact of in-service training: The duration and recency of in-service training have a negligible effect on shifting teachers away from traditional teacher-centered approaches, though recent training (within 5 years) is highly correlated with providing encouraging feedback.
- Minimal ICT integration: ICT integration represents the lowest legacy across all interventions (between 0% and 6%), hindered by infrastructural barriers, lack of sustainable financing, and technical skill gaps.

3.2 Recommendations

The study recommends the following:

- *Classroom engagement*: Shift continuous teacher professional development focus on “how to ask questions” as the dominant learner engagement strategy to practical/actionable moves on “how to facilitate peer-to-peer learning” geared towards encouraging utilization of small groups and buddy support. Exposure through coaching, mentorship, and role modelling of relevant classroom contexts is one way to develop and/or model this behavior. Coaching, mentorship, and role modelling should be supported by heads of institutions, senior teachers and CSOs.
- *Functional community of practice (FCoP)*: Heads of Institutions, with support from CSOs should establish functional CoPs at school level, encourage continuous improvement in teaching of FLN where teachers observe one another specifically to encourage effective learner-centered instructions in the context of large class sizes. The FCoP operational frameworks should include peer-to-peer modelling and support, and access to resources that improve FLN pedagogy. Where relevant resources are not available, the FCoP should be facilitated by MoE and its development partners to be innovative/creative and come up with such shared resources.
- *Teacher’s mental health and teaching behavior*: While more evidence is needed to demonstrate the medium and long-term effects of teachers’ mental health on their teaching behavior (and ultimately learning outcomes), preventive interventions are necessary for an effective teacher-friendly and supportive school system. These should include strategies for detection, prevention, and care for those affected and/or at-risk of being affected by mental health conditions.
- *Support to learners whose achievement is below learning expectations*: Strengthen teachers’ capacity on differentiated instruction, development and use of individualized education plan (IEP) to support learners during the lesson time. MoE and TSC to support and monitor the implementation of differentiated instruction and IEP. Schools and teachers should be encouraged, through the FCoP, to use EdTech, including AI, to deliver structured performance improvement plans to targeted learners. The ultimate goal should be to prevent

teacher burnout, ensure equity of access to opportunities to learn, and provide a systematic way for learner-support.

- *Learner-textbook ratio in numeracy and literacy:* Data shows schools have not achieved a 1:1 learner-textbook ratio as stipulated in MoEs policy guidelines on teaching and learning materials. Furthermore, some available essential textbooks are worn out, and not to mention the loss of key education development support after the exit of USAID-supported interventions in the last two years, which has compromised school supplies. Given the critical role FLN plays in a child's later education achievement, the MoE should invest in FLN textbooks sufficient for a 1:1 learner textbook ratio. In addition, the MoE should complement textbook provision with a textbook management strategy that includes regular inspection, maintenance, and timely replacement of damaged books for effective teaching and learning.
- *Strengthen capacity building of CSOs and school leadership* to mentor, coach, supervise, and monitor teachers. This should be done through a comprehensive framework to guide the mentorship, coaching, supervision, and monitoring. The supervision and monitoring should be frequent since the study showed that teachers who were mentored/coached/supervised displayed the expected behavior, yet teachers reported an average of two visits.
- *Legacy of FLN interventions:* The Ministry of Education (MoE) and its partners should synthesize the best aspects of past FLN interventions whose legacy is still traceable in foundational learning classrooms. The aim is to have a single and synthesized FLN instructional framework that would provide teachers with the much-needed resources for FLN teaching behavioral modelling.
- *Sustaining good teaching behavioral practices advocated for by past interventions:* The findings show teacher behavioral practices like providing encouraging feedback to learners fade over time. Therefore, school-based coaching and mentorship should adopt continuous retooling of good practices even if such practices appear obvious.
- *Infrastructural and technical ICT integration skills to support FLN pedagogy.* Findings reported low ICT integration, at only 6% of the observed lessons. A three-fold recommendation is suggested: provision of required infrastructure (e.g., digital devices like laptops, tablets, computers, internet connectivity,

power connectivity); capacity building for teachers to integrate ICT in teaching and learning (during pre-service and in-service); and maintenance of available digital resources. This will enhance integration of digital technology to close FLN pedagogical gaps observed inside the classrooms.

3.3 Opportunities for future research

- Foundational learning among learners with disabilities and special educational needs (SNE). Future research should examine teaching and learning in special schools, special units, and inclusive education settings to determine whether instructional approaches are responsive to the diverse learning needs of learners with disabilities. Key areas of inquiry include teachers' capacity to deliver inclusive and special needs education, the extent to which classroom practices align with evidence-based pedagogical approaches for different disability categories, the adequacy and use of adapted teaching and learning resources, and whether learners with SNE are achieving the expected foundational literacy and numeracy competencies.
- Teaching and learning in Early Childhood Development Education (ECDE). Given the critical role of pre-primary education in preparing children for foundational learning, future studies should assess teaching and learning practices in Pre-Primary 1 and Pre-Primary 2 classrooms. Research should examine the extent to which teachers implement developmentally appropriate and learner-centered pedagogical approaches, the quality of classroom interactions, and whether learners are attaining the foundational competencies expected before transitioning to Grade 1.

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