

Effects of Fursa kwa Watoto (FkW) on instructional practices and classrooms

INTRODUCTION

Quality pre-primary education plays an essential role in laying the foundation for academic success and lifelong learning.¹ Recent studies document how early childhood education (ECE) programs have yielded positive gains in lifetime outcomes for education, health, employment, and civic life for recipients and their offspring.² Researchers have concluded that ECE “can be an effective way to break the cycle of poverty.” However, “quality matters” and “high quality programs produce high quality outcomes” while lower quality programs yield disappointing results.³

Fursa kwa Watoto (FkW) Opportunities for Children

Given the potential of ECE, the FkW collaborative set out to build an evidence-based pre-primary model that would be low-cost, effective, sustainable, and scalable in resource constrained conditions. The FkW model involves training and mentoring for teachers to acquire improved instructional skills. FkW focuses on evidence based instructional components, such as lesson planning, student assessment, reflection and the daily use of child centered participatory approaches, learning areas, and supportive teaching and learning materials. The model also requires training for head teachers, school management committees (SMCs), and education officers at the ward, district, and regional levels. (Visit <http://fkwlearningagenda.com> for more information on FkW components and evidence.)

The FkW collaborative worked together, beginning in 2013 to develop the model, incorporating intensive and ongoing monitoring, evaluation, and learning activities. Implementation lessons were compiled from 2014 through 2015 and swiftly integrated into the intervention to continuously improve the fidelity and efficacy of the FkW model. Following the pilot, the FkW implementing organizations [Children in Crossfire (CiC), Aga Khan University (AKU), Maarifa Ni Ufunguo, and Tanzania Home Economics Association (TAHEA)] conducted training and mentoring activities in rollout schools during the 2016 and 2017 school years.

Tanzania context of pre-primary education

As the FkW model was in development, the situation of pre-primary education became increasingly tenuous. While Tanzania has succeeded in increasing access to pre-primary, the march towards quality had never kept pace. Instead, pre-primary was perceived as low priority and

suffered from a staffing and classroom shortage, a teaching cadre lacking training in ECE, and insufficient financial resources. Compounding the situation, recent policies exacerbated these deficiencies, leading to a “positive emergency”. For example, in 2016, the Fee-Free Basic Education Policy increased access by abolishing fees and family contributions.⁴ However, this led to a 38 percent increase in student enrollment without increased funds to cover the cost of educating more students. At the same time, a “temporary hiring on civil service recruitment”,⁵ complicated by increased teacher retirements, led to a 31.7 percent decrease in the number of qualified teachers from 2017 to 2018.^{5,6} A teacher certification verification activity in 2017 further reduced the teaching force. This drove the pupil to teacher ratio (PTR) to 1:215 and 1:249 for qualified teachers in 2018.^{6,7} Additionally, the “no forced contributions” policy was reiterated in 2018. Many Tanzanians misinterpreted the policy believing they should not contribute to any education costs. This further reduced parent and community contributions for feeding programs, infrastructure, and learning materials.

FkW Learning Agenda: Methods and data sources

Despite the challenging context, the FkW model demonstrated impressive results among teachers in pilot schools, suggesting that instructional practices could improve and improvements might be sustained.⁸ Consequently, FkW was rolled out to intervention schools in 2016 and 2017 with an accompanying Learning Agenda—or set of monitoring, evaluation, and learning activities—designed to assess the following priority evaluation questions:

- How did FkW effect pre-primary instruction?
- What components of FkW sustainable?
- Is there evidence that FkW “spilled over” beyond intervention schools?

The evaluating organizations in the collaborative (Mathematica and CSR Group Africa) conducted a range of Learning Agenda activities including repeated observations of teachers’ instructional practices, school finances, student enrollment, and attendance tracking and a randomized control trial (RCT) to measure impacts on student learning. In total, we conducted 1) four rounds of classroom observations in 102 schools, 2) student learning assessments among 1,500 pre-primary students measured

Key learning from ECE research

“Quality matters.” Pre-primary attendance alone will not yield the anticipated return on investment. The quality of the instructional practices and the learning environment matters. Students need trained teachers, learning materials, safe classrooms, and school feeding.

SOURCE: <https://heckmanequation.org>

at three time points, 3) telephone surveys with head teachers to collect monthly enrollment, attendance, and capitation grant data, 4) qualitative in depth interviews with teachers, head teachers, ward, quality assurance, district education and executive officers, 5) focus group discussions with School Management Committees and parents, and 6) a costing study. (For a technical memo describing study methodology and analytics and all evaluation results, visit <http://fkwlearningagenda.com>.)

Again, we had modest expectations as we recognized that teachers were managing overcrowded classrooms, had increased responsibilities given the staffing shortage, were forced to reduce instructional time because of teaching multiple grades and sharing classrooms, and that many schools lacked feeding programs, which further shortened the school day. Still the collaborative agreed it would be useful to assess teachers' practices to contribute to Tanzania's efforts to improve ECE quality.

Study design and sampling

In 2015, we set up the study to assess instructional practices and classrooms in a sample of intervention and matched comparison schools in the Kilimanjaro and Mwanza regions. First, we conducted a mapping of schools across two districts in the target regions. We gathered basic characteristics of the school, leadership, pre-primary teachers, classes, and students. Following the mapping, we stratified schools based on the district type (urban or rural) and performance measures (Standard 7 exam scores) in the two regions. Then, we selected schools in each district proportional to the size of the strata. We randomized schools to the intervention and control groups using a random number. We selected 80 schools in Kilimanjaro and Mwanza regions. Schools were randomly assigned to the FkW intervention or the control group so that the study groups were similar on school-level characteristics before the intervention was implemented. We assessed balance on several variables, such as the number of pre-primary teachers and student enrollment.

Prior to each data collection, we trained classroom observers extensively to ensure they completed the tool in a systematic manner and reached an interrater reliability score of 96 percent.

We observed 81 schools in May and November 2017 and in March and November 2018 across Kilimanjaro (n=40) and Mwanza (n=41).¹ We observed the same teachers at each interval, unless the teacher had left the school, in which case we observed their replacement. We also observed a separate sample of 20 schools from the pilot FkW implementation. We randomly selected 20 schools (ten in both Mwanza and Kilimanjaro) that had participated in FkW through 2016. We conducted repeated

classroom observations of this sample at the same interval as the intervention and control groups.

Assessment tools

We assessed instructional practices, classrooms, and schools using an observational tool designed to measure the quality of the learning environment and teacher performance. The teacher observation tool and rubric was developed by AKU and revised in collaboration with members of the FkW Steering Committee.² We focused on FkW components such as lesson planning, instructional skills, learning materials, student participation, and classroom management. The tool also captures aspects of the school environment, including school feeding and sanitation facilities. Teachers received a score from 1 (poor) to 5 (excellent) in each domain. Scores were then converted to percentages with 1=20% and 5=100%.

For the qualitative study, we interviewed teachers, head teachers, and ward, quality assurance, and district education and academic officials. We also conducted focus group discussions (FGDs) with parents, community members, and school management committees. Trained interviewers conducted interviews and FGDs.

Findings

School Characteristics: First we examined school characteristics by region. For all measures, a stark contrast emerges between regions. Mwanza schools have higher student enrollment, teacher to pupil ratios, and a lower percentage of schools with adequate space, learning materials, and feeding programs compared to Kilimanjaro schools. They are more likely to have open latrines, rather than safe, hygienic toilets.

Head teachers from all schools reported receiving regular capitation grants. The official grant is TSh 10,000, (US \$4.38) per pupil per year. District offices generally retain about one third of the grant to purchase textbooks. We found that schools in Mwanza received slightly higher per student grants per year (on average \$2.71 for intervention and control schools) compared to Kilimanjaro (\$2.19). However, Mwanza schools received both fewer and smaller average annual parent contributions, per pupil, (\$0.09 for intervention and control schools compared to \$3.37 in Kilimanjaro). Kilimanjaro schools operate with twice the resources as those in Mwanza.³

Instructional practices and classrooms: Next, we found differences between intervention and control schools for most outcomes. Note that we do not show the baseline, conducted prior to FkW training, however we know the mapping data and visits to the schools confirm the sample was balanced. Respondents confirmed that differences were due to the FkW intervention. (Figures 1-9).

¹ We originally selected 65 intervention and 65 control schools for the student assessment study. Next we selected 40 intervention and 40 control schools for the classroom observations. An additional intervention school was inadvertently added to the sample during fieldwork.

² See <https://www.fkwlearningagenda.com/regional-dissemination-meetings> for study the observation tool and rubric.

³ See <http://fkwlearningagenda.com> for a details on school financing.

Figures 1 and 2 illustrate average scores at four time points for measures of instructional practices and the learning environment. Overall, teachers in intervention schools (solid line) out performed those in control schools (dashed lines), though control school teachers also improved performance. Teachers in pilot schools generally sustained practices over time.

Figure 1. Instructional strategies and skills: Scores by intervention and control group and region*

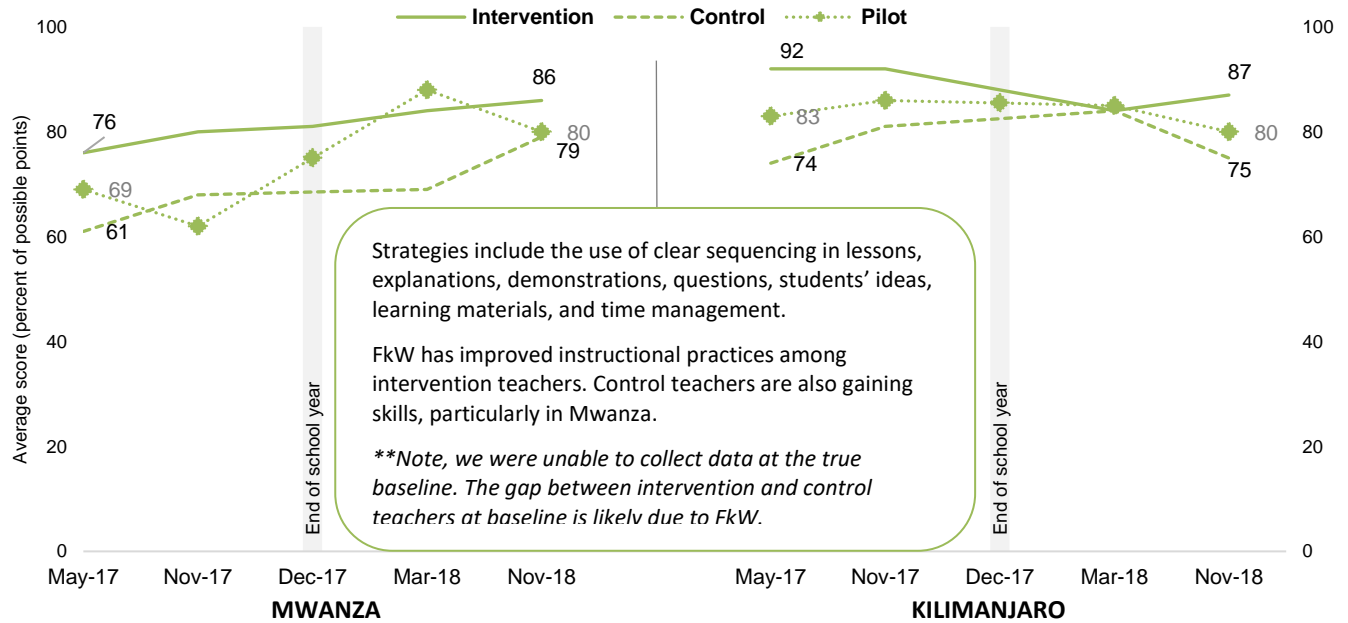
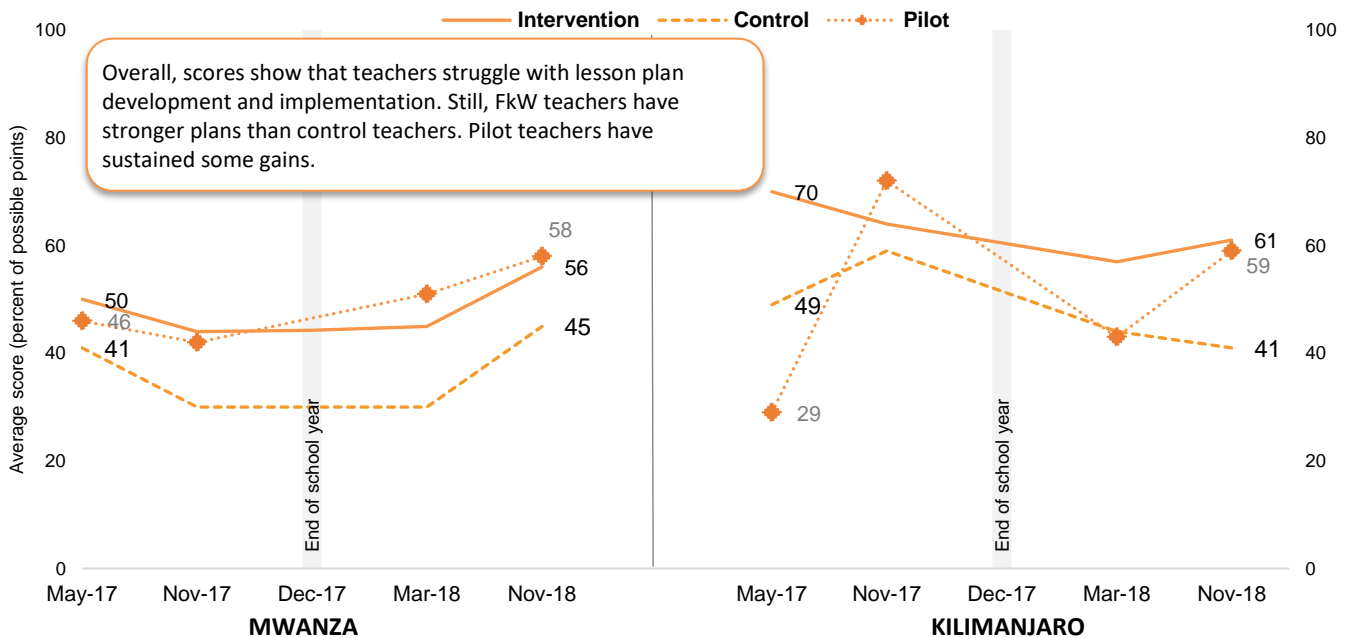


Figure 2. Lesson plan development and implementation: Scores by intervention and control group and region*



* Note that we did not collect data at the true baseline which would have been in January 2017. The RCT design, mapping data, and school visits suggest there were no differences between intervention and control teachers and schools at baseline in Mwanza or Kilimanjaro.

Figures 3 and 4 illustrate average scores at four time points for measures of child led activities and daily routines. Overall, teachers in intervention schools (solid line) out performed those in control schools (dashed lines), though control school teachers also improved performance. Teachers in pilot schools generally sustained practices over time.

Figure 3. Child led activities: Scores by intervention and control group and region*

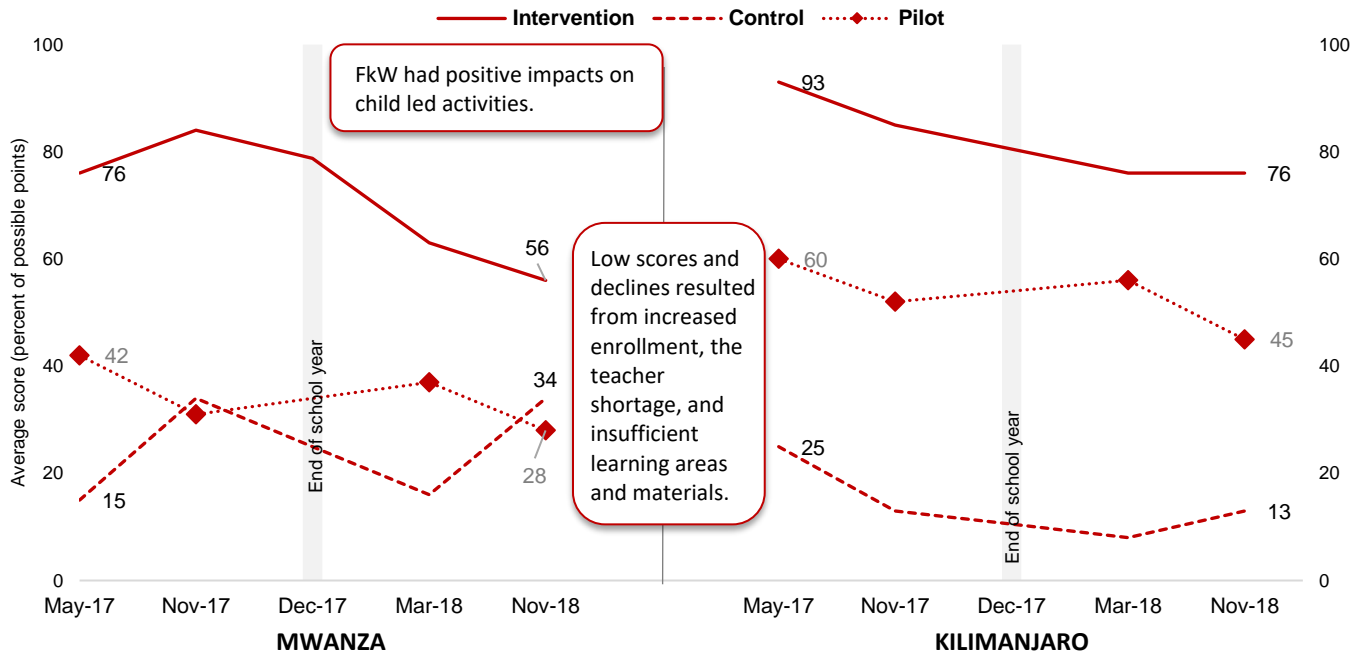
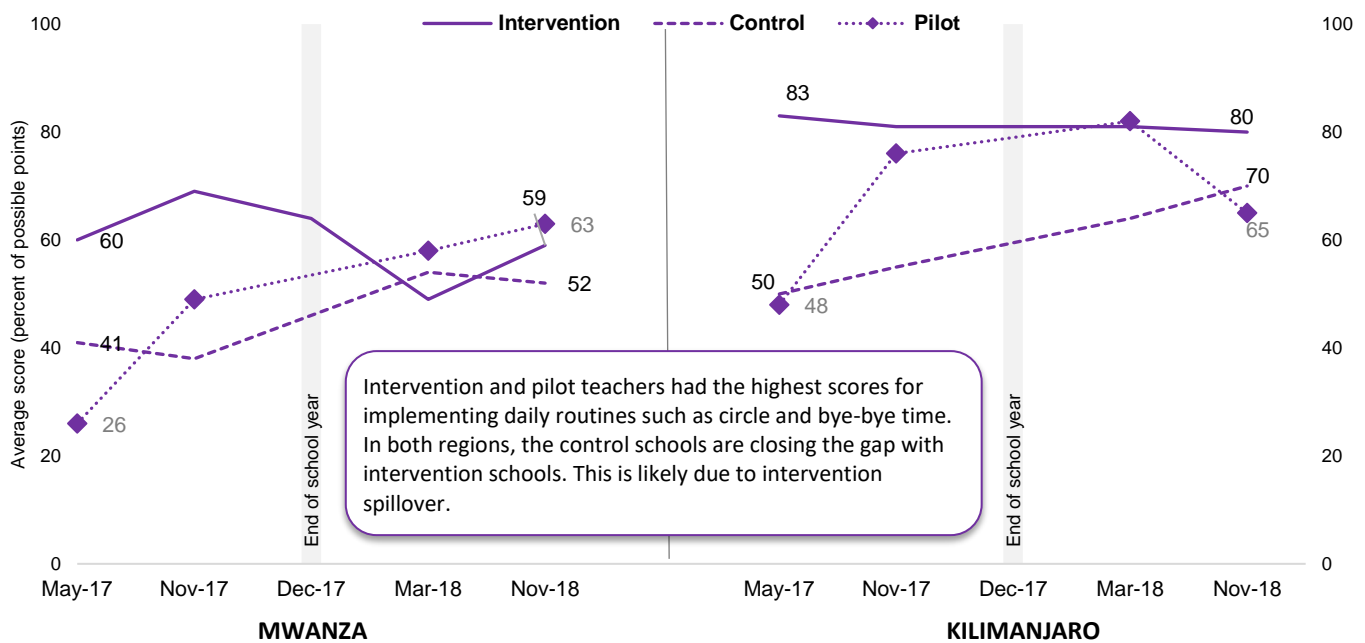


Figure 4. Daily routine: Scores by intervention and control group and region*



Figures 5 and 6 illustrate average scores at four time points for measures of classroom management and classroom space. Overall, teachers in intervention schools (solid line) outperformed those in control schools (dashed lines), though control school teachers also improved performance. Teachers in pilot schools generally sustained practices over time.

Figure 5. Classroom management: Scores by intervention and control group and region*

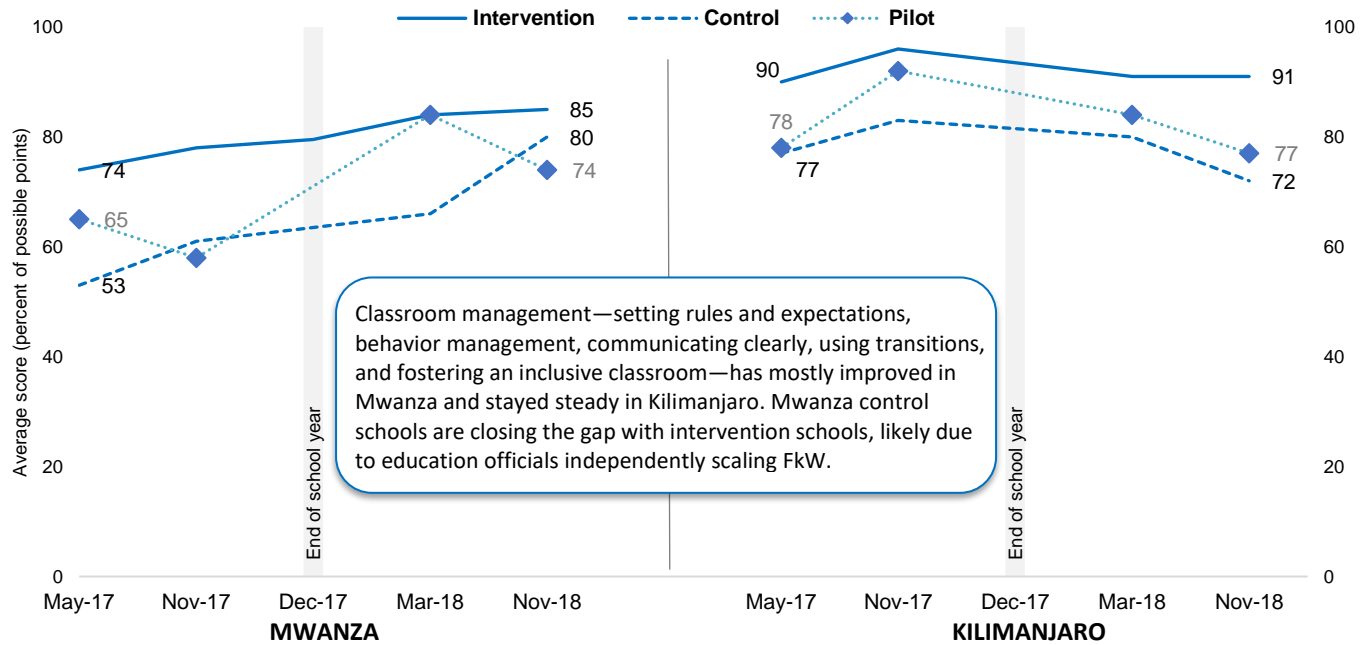


Figure 6. Classroom space: Scores by intervention and control group and region*

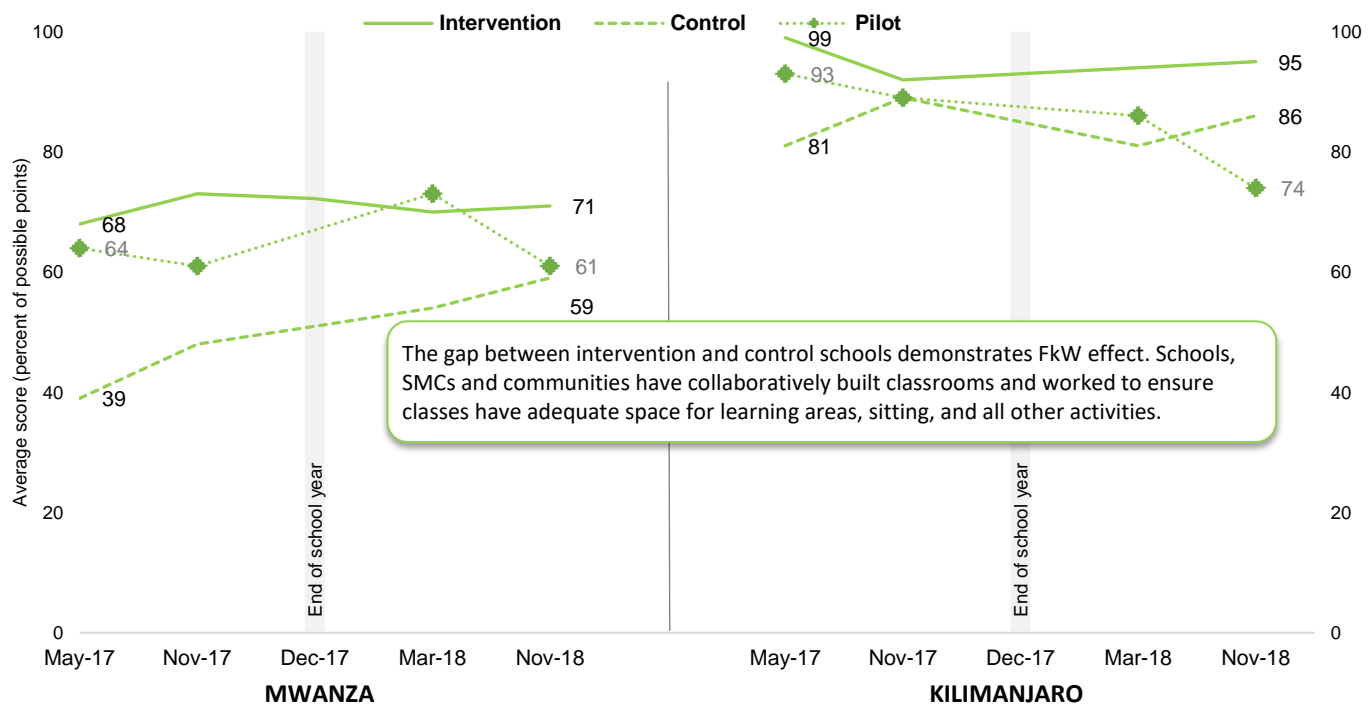


Figure 7 and 8 illustrates average scores at four time points for measures of learning areas and learning materials. Overall, teachers in intervention schools (solid line) out performed those in control schools (dashed lines), though control school teachers also improved performance. Teachers in pilot schools, demonstrated sustained practices for many outcomes.

Figure 7. Learning areas: Scores by intervention and control group and region*

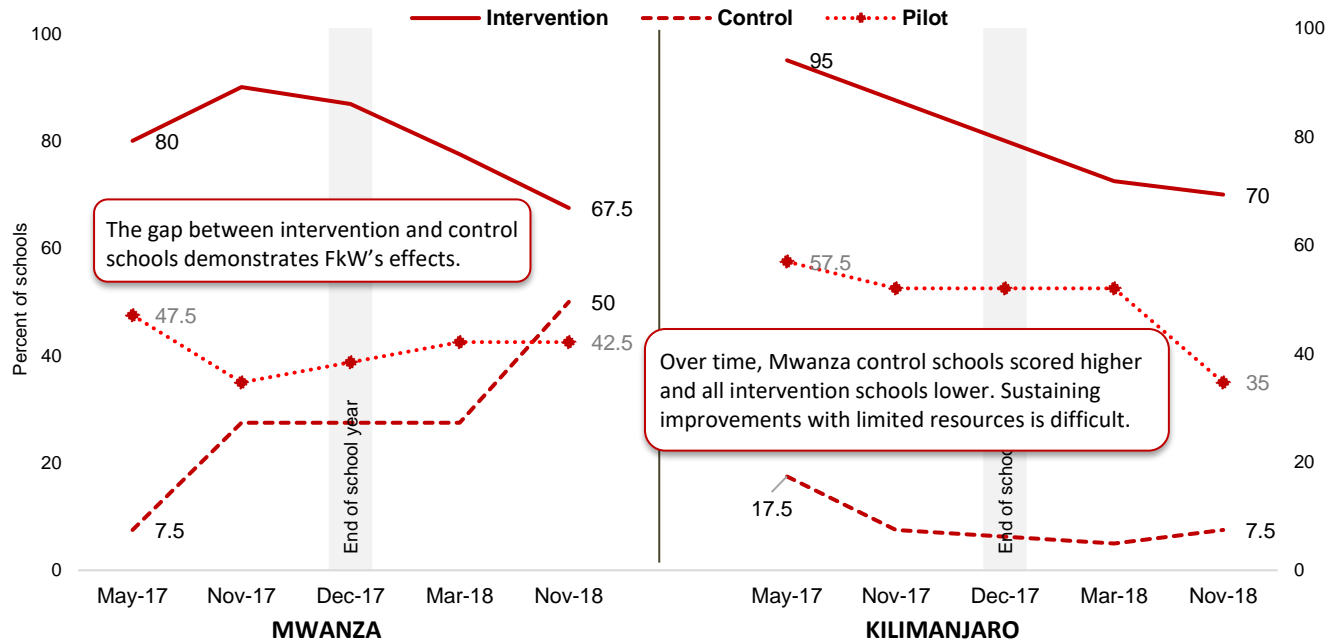


Figure 8. Learning materials: Scores by intervention and control group and region*

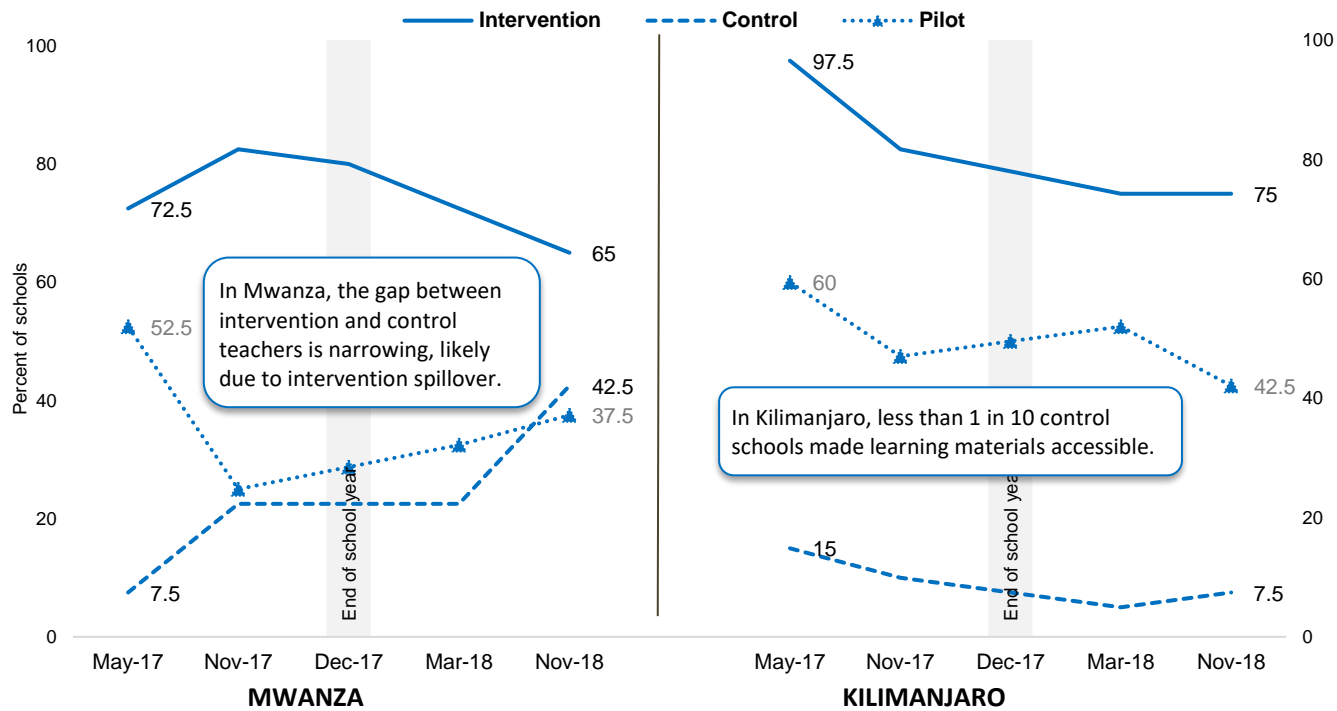


Figure 9 and 10 illustrates average scores at four time points for measures of feeding programs and sanitation facilities. Overall, teachers in intervention schools (solid line) out performed those in control schools (dashed lines), though control school teachers also improved performance. Teachers in pilot schools, demonstrated sustained practices for many outcomes.

Figure 9. Feeding program: Scores by intervention and control group and region*

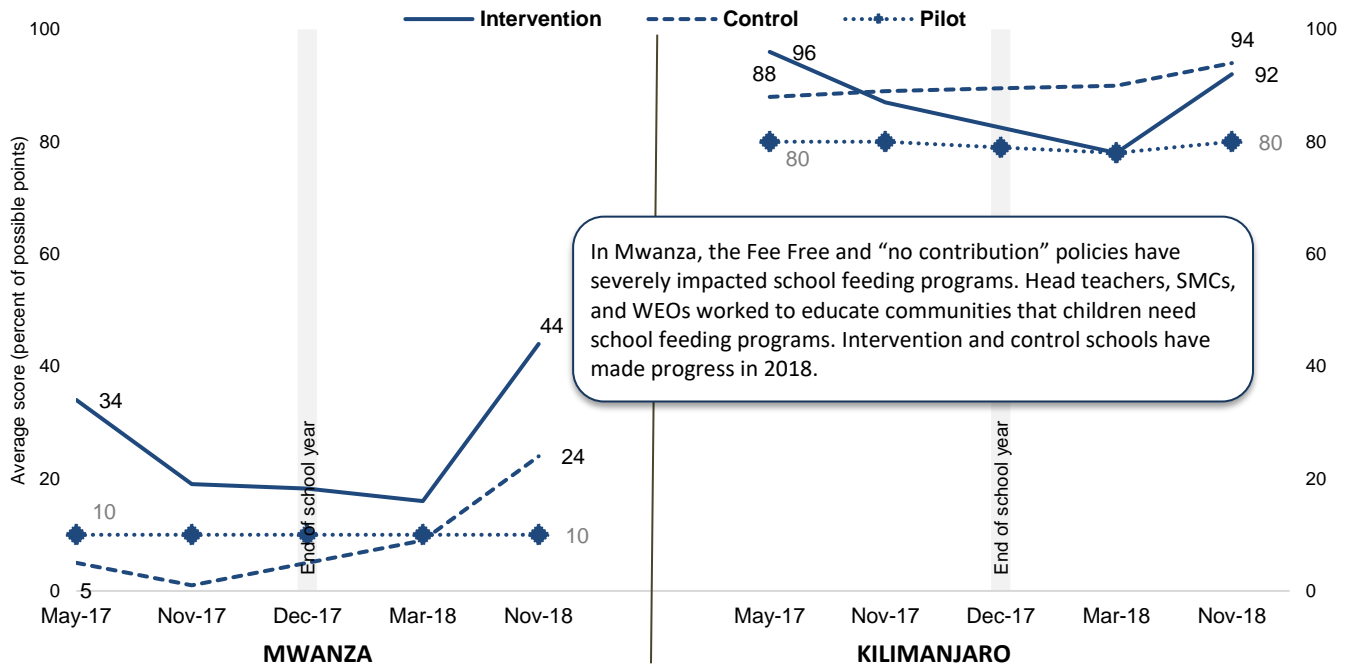
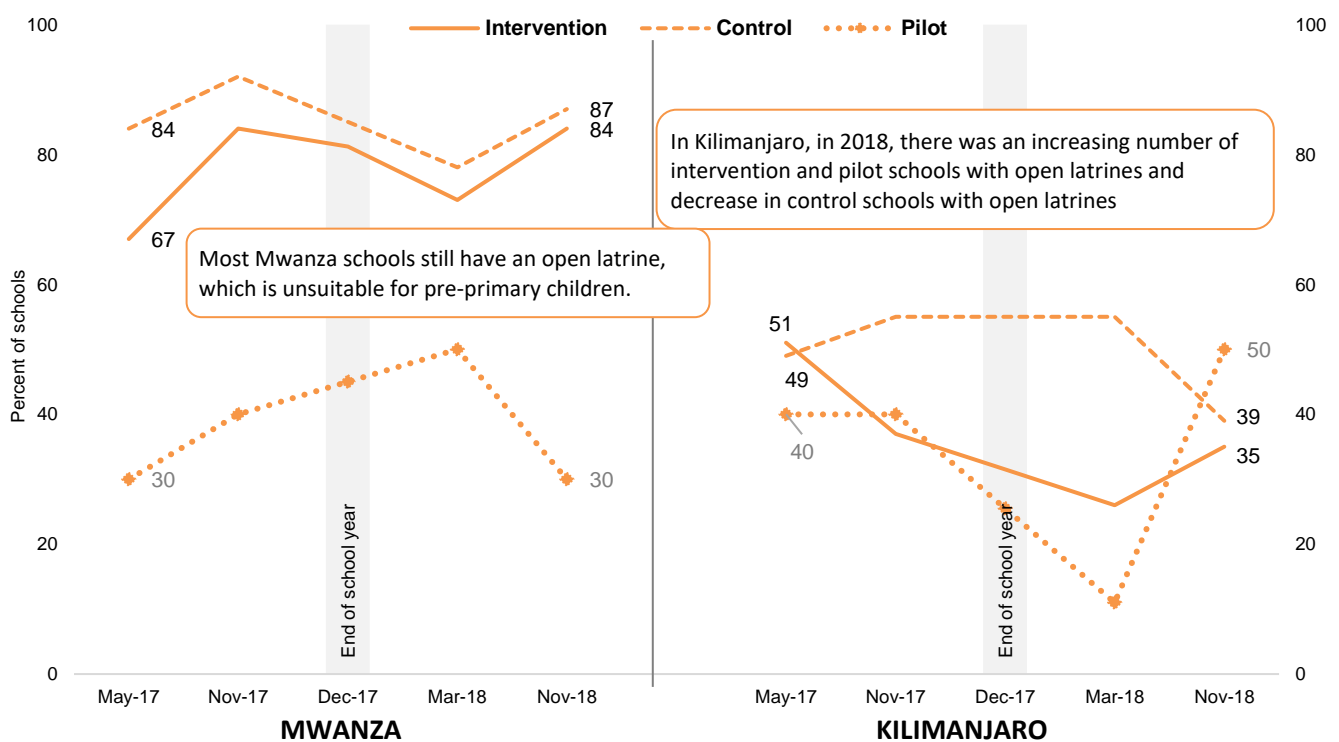


Figure 10. Open pit latrines: Scores by intervention and control group and region*



Overall, results from the classroom observations show how FkW model components were adopted and implemented by teachers and school teams. Intervention teachers had stronger instructional practices and maintained better learning environments than control school teachers for most outcomes. Teachers from pilot schools often scored between intervention and control school teachers. They generally out-performed control school teachers though with some loss in quality over time. These observations reveal how the FkW model has spilled over to control schools, while the qualitative data confirms FkW expanded to other schools and grades outside of the study. In the qualitative study, several district officers described how they brought the FkW model components to other schools and grades (Table 1).

Table 1. Quotes on spillover

“In our district council we had 20 schools in Fursa. We have tried to make sure all 80 government schools are taught by FkW schools. So, I can say that FkW has helped all 80 schools in our district council to get the training offered through the opportunity for children program.”

DAO

“There are notable changes. For example, Misungwi has a standard model because of FkW. We have 145 schools taking part. They have a special class for preprimary education and follow the criteria.”

DEO

“[FkW has been so valuable]... and that’s why we were also trying to make [upper grades] too. Standard one should be organized as pre-primary. The walls in the classroom should speak. The child should not see big changes [between grades]. I went and saw Standard 1 ... even these schools have teaching tools.”

QAO Mwanza

“First I am proud of what the program has started. This program didn’t touch every school. But by using the morale from schools where the program was implemented, we were able to do this to all the preprimary classrooms. I was visiting every school and teachers from other schools were visiting schools with this program.”

WEO Mwanza

“After seeing that our fellows from Kilimanjaro succeeded to a large extent, it made us come back with one agenda. The education officer, professional officer, and I decided: All our schools should adopt the culture from Kilimanjaro. We did something called transferring and spreading knowledge. We told trained teachers to form clusters in their areas and teach those schools that did not get the FkW training. We visit schools that didn’t get the FkW training, and there were big changes. This made me think that it is possible. We found that even these teachers who were not trained were able to gain knowledge and their classes changed. A system similar to Fursa was seen. We succeeded by 95%. Even those schools that were not able to get the FkW opportunity have now adopted Fursa.”

QAO Mwanza

The qualitative results were consistent with quantitative results and provided more insight into FkW-related accomplishments and the challenges that teachers and schools face (Table 2). For example, during interviews with teachers, head teachers, ward education and quality assurance officers, respondents described how FkW helped them understand the value of pre-primary and how and why it is the foundation of learning (Table 3). They also identified and explained major challenges including congested classrooms, hunger, absenteeism, students with different abilities, and a shortage of materials, all of which undermines quality education (Table 4).

“Pre-primary is a priority because it is the foundation. We have given preprimary education a priority with the understanding that it is the foundation of every student in their future studies, not only at primary level but also at secondary level and even at university level. When a student has mastered reading, writing and arithmetic, it gives them a very good opportunity to do well in their future studies and produce very good results.”

DEO

Table 2. Accomplishments, challenges and opportunities

Accomplishments	Challenges and opportunities
Instructional skills and strategies	
<p>FkW intervention teachers describe and demonstrate stronger instructional skills than control teachers. Most FkW teachers continue to implement practices indicating some sustainability. Teachers described using practices such as making clear introductions, linkages, and closure during lessons. They described formative checks and student assessments. They varied teaching approaches and learning activities, and managed time to accomplish the full lesson.</p>	<p>The majority of intervention, pilot, and control teachers report needing additional training and support to implement practices. Teachers also report lacking time to complete lessons; needing help so he/she can work with struggling students; lacking supportive learning materials for lessons; and the challenge of transitioning between lessons given large class sizes. Practices that require improvement include reflecting on teaching and learning, giving clear instructions, and increasing participation and engagement among all students.</p>
Lesson plans	
<p>FkW intervention teachers have a more advanced understanding of lesson plans compared to control teachers. Many FkW teachers and head teachers can describe some key components of the lesson plan and how to achieve plan goals.</p>	<p>Teachers struggle with plan development and implementation because they lack time to develop and implement daily plans. The time shortage is due to teaching multiple classes, congested classrooms, and a lack of feeding programs. Additional problems include insufficient space, teaching tools, and learning materials, and insufficient support and feedback.</p>
Child led activities	
<p>Most teachers recognize the value of and strive to implement child led activities.</p>	<p>Again, challenges to implementing practices include congested classrooms, and teacher, space, and material shortages.</p>
Daily routines	
<p>The majority of teachers describe at least some components of quality daily routines.</p>	<p>The challenges include teachers' lack skill and time, high PTR, inadequate space, and learning material shortages.</p>
Classroom management	
<p>Most intervention schools can effectively manage classes using strong instructional practices, participatory methods, learning materials, and by developing positive relationships with students. Many teachers overcome challenges because they love students and teaching.</p>	<p>In many schools, the space is insufficient to effectively manage class. Congested rooms limit teachers' ability to implement best practices. Some pre-primary classes share space with other grades. Teachers face behavioral problems in overcrowded classrooms that lack learning materials and have hungry students.</p>
School feeding programs	
<p>All school officials recognize the importance of school feeding to child learning. While some Kilimanjaro families stopped food contributions following the no contribution policies, officials quickly sensitized parents and programs resumed. In Mwanza, some schools restored or added food programs, with intervention schools leading the way.</p>	<p>The majority of schools in Mwanza still lack feeding programs. The lack of food severely undermines quality pre-primary as students are hungry, the class day is reduced, and there is less time on learning.</p>
Classroom space	
<p>Intervention and control schools have improved the learning space with clear evidence of FkW spillover from intervention to control schools. Further, TIE training—using FkW principles—also emphasized the value of pre-primary.</p>	<p>Intervention and control schools still report space shortages, particularly in Mwanza. Teachers are unable to implement some lessons due to space issues.</p>
Learning corners	
<p>Most respondents understand the importance and have organized learning corners. In Kilimanjaro, teams of teachers and parents work together to prepare materials for areas. Teachers report that students “learn by themselves” when corners are organized and stocked.</p>	<p>Many schools lack sufficient space for learning corners and many teachers lack the time to organize learning corners. Further, short school days limit the time children have in learning corners.</p>
Learning materials	
<p>FkW classrooms continue to be child-centered learning environments. Many teachers are creative in making items using locally available, low-cost materials. Some teachers use their own salary to purchase materials. In some schools, teachers work with colleagues from other grades, students, parents, and SMCs to develop materials.</p>	<p>Teachers struggle to obtain materials and repeatedly request the basics: manila cards, markers, paper. Sustainability is challenged by the teacher shortage, inadequate school financing, and parents' low motivation to engage with pre-primary.</p>
Sanitation facilities	
<p>In some schools, SMCs and education officials identified financial and human resources to build and renovate classrooms and latrines.</p>	<p>All schools struggle with unsafe infrastructure that undermines learning. Head teachers report that the Fee Free policy was not accompanied by increased resources for capital expenditures.</p>

Table 3. Quotes on accomplishments

<p><i>“Early education is the master foundation of primary education. ...Improving the delivery of preprimary education will result in producing children who are well equipped to tackle other subjects as they proceed with their primary education. It provides them with basics such as reading and writing which are very essential skills for primary education.”</i></p> <p style="text-align: right;">Moshi WEO</p>
<p><i>“Teachers with FkW training are more confident... They are also more effective than the teachers with no training because they are taught tactics to make the students active and happy. But some [control teachers] copy the style of those with training. Still they can’t deliver as well as the teachers with proper training. [FkW teachers] are able to prepare their own plans and they can bring an idea to the head teacher so that they can get what is required for their students. They can know what they have and what they miss differently from the teachers with no trainings.”</i></p> <p style="text-align: right;">WEO Mwanza</p>
<p><i>“I use the approaches. I was taught that you should draw your materials as big and colorful as it can to make it attractive. You can take the students out and teach them by actions and games where you participate in those games. At times you give students chances to talk and play with you.”</i></p> <p style="text-align: right;">Teacher Moshi</p>
<p><i>“[Child led activities] makes the teaching process easier because children can learn on their own.”</i></p> <p style="text-align: right;">Teacher Mwanza</p>
<p><i>“The training made me see the importance of the areas. Those areas help students gain skills in interacting and relating when they meet, stay, and play together.”</i></p> <p style="text-align: right;">Teacher Mwanza</p>
<p><i>“We have learnt many things from Fursa. For instance, when we went to Moshi, we noticed that parents contribute food. So, when we came back, we tried to implement this in our schools. We first started with those schools that were under Fursa. We told them that the children should get lunch in school so that they can learn comfortably just like how other places have done and succeeded. This is because many schools adopted this culture and they distributed food including porridge. So, I would say that through Fursa Kwa Watoto I was able to gain great experience and these trainings have equipped me to do my job in a safer environment.”</i></p> <p style="text-align: right;">QAO Mwanza</p>
<p><i>“The parents contributed food for the children. Most schools started by providing porridge but we later improved on that so they add peanut butter and milk.”</i></p> <p style="text-align: right;">DAO</p>
<p><i>“We have fewer challenges compared to the past years because pre-primary teachers, head teachers, and academic teachers have discovered the value of pre-primary. Pre-primary helps children learn how to read at an early age and reducing challenges caused by not knowing how to read and write in upper classes. It also reduces the number of children who do not know how to read and write, and absenteeism because there are many teaching aids, and better methods of teaching, such as songs, games. All this motivates children to love school.”</i></p> <p style="text-align: right;">DAO</p>

Table 4. Quotes on challenges and opportunities

<p><i>“I am still struggling because these classes are supposed to be taught by two teachers. It is difficult for me sometimes. Today I was teaching and a child got sick. You find that sometimes the children fight and sometimes they play, so there should be another teacher teaching the class.”</i></p> <p style="text-align: right;">Teacher, Moshi</p>
<p><i>“My challenge is the improvisation of materials. When you prepare a lesson, the materials have to be available. If they are not there, then you have to improvise. So when it comes to the teaching of the children they don’t reach the goal because the class is too big. It must be taught by two teachers. Then when you teach alone some of the children cannot get the materials in the right time.”</i></p> <p style="text-align: right;">Teacher Moshi</p>
<p><i>“The challenge is I have so many students is children with different abilities. The challenge is when one child is a fast and another slow learner. What I do? I make sure I teach the uniform thing as required.”</i></p> <p style="text-align: right;">Teacher Moshi</p>
<p><i>“[Teachers] provide quality education but what I can say is it depend on the number of students. It’s difficult to provide quality education depending on the big number of children.”</i></p> <p style="text-align: right;">WEO, Mwanza</p>
<p><i>“Most of the children here use their native language so this is a problem. By using learning tools and pictures, the children have begun to understand what they are being taught. Although most of them do not understand Swahili.”</i></p> <p style="text-align: right;">Head Teacher Mwanza</p>
<p><i>“...preprimary education is unable to succeed. Its success is minimal because of the infrastructure as well as resources. We do not have funds to manage preprimary education, therefore it is not effective.”</i></p> <p style="text-align: right;">Head Teacher Mwanza</p>
<p><i>“The main problem is the high number. It is difficult to reach each one of them since they have different levels of understanding and each needs you to be close to them. You have to manage time however the time frame of 20 minutes is a challenge... You know these children, arranging them in groups would finish 20 minutes. The period is over and what time would you teach? Time is a challenge, especially moving from one lesson to another.”</i></p> <p style="text-align: right;">Teacher Mwanza</p>
<p><i>“Frankly there is nobody who supports me.”</i></p> <p style="text-align: right;">Teacher Moshi</p>
<p><i>“The teacher could perform well. His lesson plan is very detailed and clear but when he gets to class, he meets so many students...it’s a challenge to implement the prepared lesson plan. He plans to attend students individually to write the letter “a”. How will he implement if he has 80 students and has only 15 minutes?”</i></p> <p style="text-align: right;">Head Teacher</p>
<p><i>“The big challenge ... is over crowdedness in the classrooms until the teacher has nowhere to step. We have schools which this is a very huge challenge ... If we got classrooms it will be so nice. Good classroom with windows and doors, painted walls and nice roofs. The main challenge in my district is infrastructure. The teacher may be trained but the environment might be a challenge in doing their work effectively.”</i></p> <p style="text-align: right;">QAO Mwanza</p>

Both quantitative and qualitative data provided insights into FkW's sustainability, suggesting that many components of FkW are sustainable, such as pre-primary as interactive classrooms, the implementation of child-led activities, the use of daily routines, learning corners and locally sourced materials, and partnerships between teachers, head teachers, SMCs, and WEOs. However, the quantitative and qualitative reports also suggest that teachers may revert to old practices without ongoing training and mentoring. Further, without a plan to replace trained teachers who retire, leave, or switch grades, replacement teachers implement old practices. Also, with additional support (such as paraprofessionals providing classroom support) teachers are unable to manage large classes and meet students' diverse learning needs.

SUMMARY

The FkW intervention aimed to improve pre-primary quality. The model was originally developed for classrooms with a pupil to teacher ratio of 1:45. However, the FkW model was implemented at a time when enrollment was skyrocketing, the teacher and classroom shortage worsening, and resources were lagging behind need (head teachers from all schools reported that pre-primary classes received no formal financing, capitation grants were far below actual costs, and grants did not account for the number of pre-primary students). Nevertheless, FkW made direct contact with 180 schools and their head teachers or deputy head teachers, 233 teachers, approximately 23,000 students, and ward, quality assurance, and other education officers across four districts and two regions. FkW had indirect contact with many more schools, teachers, and students. Based on this experience, the study yields encouraging findings about how to improve pre-primary quality through applied training and mentoring on instructional practices.

First and foremost, FkW catalysed increased attention and priority to pre-primary. Teachers in intervention and control schools adopted key components of FkW, including evidenced based instructional practices, such as lesson planning, student assessment tasks, and reflecting on teaching, as well as the daily use of child centered participatory approaches, learning areas, and supportive teaching and learning materials. FkW demonstrated how once trained, head teachers and SMCs can develop and implement school action plans. Applied training for ward, quality assurance and district education officials succeeded in sensitizing these stakeholders to the foundational value of ECE, enabling WEOs and QAOs to mentor teachers and DEOs to establish pre-primary trainings. Further, FkW demonstrated how parents and other stakeholders can be mobilized to support material production, classroom transformation, and infrastructure improvements such as latrine renovation and establishing hand-washing facilities.

We found quantitative and qualitative evidence of widespread spillover of FkW approaches from intervention to control schools. In both Mwanza and Kilimanjaro, DEOs and WEOs reported implementing FkW components district-wide because the model represented a promising and tested approach to quality pre-primary. While intervention teachers were more likely to demonstrate quality instructional practices, we observed and respondents reported improved instructional practices in both study groups that stakeholders uniformly attributed to FkW.

The sustainability of FkW varies by model component, region, and school and is undoubtedly undermined by the contextual challenges. While many components are easy to implement and make teachers' jobs easier, such as the use of learning materials and learning areas—at a systems level—these practices will be hard to sustain until a critical mass of the pre-primary workforce has been trained and stakeholders sensitized to the value of this approach. Stakeholders reiterated many times that teachers require ongoing professional development to bolster skills and sustain practices.

Respondents also reported that other programmes were operational, including the Global Partnership for Education Literacy and Numeracy Education Support programme as well as teaching and learning materials distribution for the lower grades. Given that we had intervention and control schools in each region, we do not believe this impacted our comparison, however there may be differences between the regions that can at least partly be attributed to these programmes. Finally, respondents reported that the serious contextual challenges undermined their ability to provide quality pre-primary.

We also note the FkW model informed the Tanzania Institute of Education (TIE) Teacher's Guide for Pre-Primary Education and provides concrete examples on how to effectively implement competency based pre-primary education.

POLICY IMPLICATIONS AND RECOMMENDATIONS

Given these promising findings and Tanzania's obligation to provide quality ECE, the Government of Tanzania, and education officials at the regional, district, ward, and school level prioritize actions to improve pre-primary quality. We recommend the following priorities:

- **Prioritize continuous teacher training and mentoring using FkW model components.** Given teachers' success in implementing the FkW model including demonstrating improved instructional strategies, lesson planning, classroom management, child centered learning approaches, and the use of learning areas and materials: We recommend the GoT prioritizes and funds continuously training teachers on approaches as part of

School Based-Continuous Professional Development (SB-CPD) In-Service Training Modules (INSET). At the district, ward, and school levels, we recommend that officials prioritize and plan for continuous knowledge transfer, setting up communities of practice, and promoting ongoing professional development

- **Prioritize reducing the teacher shortage.** Given the extreme contextual challenges, the teacher shortage (1:215 PTR in 2018) and hiring freeze, and that teachers have insufficient mentoring and support: We recommend that the GoT takes immediate action to relieve the teacher shortage by recruiting and placing qualified teachers. We recommend the government avoid moving untrained secondary teachers given respondents' reports that these teachers do not have adequate instructional practices for young children. Rather officials should ensure all new pre-primary teachers are adequately trained and can demonstrate appropriate instructional practices for pre-primary students. At the district, ward, and school levels, we recommend identifying co-teachers to free time for lesson planning, implementation and individual student support. We also recommend reducing the teacher workload to enable pre-primary teachers to focus on one grade. Officials should also organize and build communities of support and identify master trained teachers, head teachers, WEOs, QAOs to mentor.
- **Prioritize funding pre-primary.** Given the extreme lack of resources for pre-primary education and the fact that pre-primary students are not yet included in capitation grants: We recommend that the GoT prioritize timely inclusion of pre-primary students in capitation grants so resources can be allocated to learning areas and materials, building safe classrooms with adequate space, and other infrastructure. Pre-primary needs its own unique item line in the national and school budgets.
- **Prioritize collaborations and community engagement.** Education officials and schools should work closely to educate communities on the need for contributions for infrastructure, materials, and feeding programs. We recommend that stakeholders at the district, ward, and school levels should share lessons, build and expand successful collaborations among teachers, head teachers, SMCs, WEOs, QAOs, VEOs, and parents. Collaborations may focus on creating securing classroom space, funding feeding programs (to alleviate hunger, inability to concentrate, and absenteeism), engaging parents on the importance of pre-primary education, learning material development, reinforcing lessons at home, improving attendance; and community education and parent communication on registering students at the right age and developmental stage for pre-primary.

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¹The Lancet. "Advancing Early childhood development: from science to scale." October 4, 2016. <https://www.thelancet.com/series/ECD2016>

² Heckman, J. "Perry Preschool: Intergenerational effects toolkit." The Heckman Equation. Available online at <https://heckmanequation.org/resource/perry-preschool-midlife-toolkit/>

³ Heckman, J. "Early childhood education: Quality and access pay off." The Heckman Equation. Available online at <https://heckmanequation.org/resource/early-childhood-education-quality-and-access-pay-off/>

⁴ UNICEF. Education Budget Brief 2018, Tanzania. <https://www.unicef.org/esaro/UNICEF-Tanzania-2018-Education-Budget-Brief-Mainland.pdf>

⁵ Global Partnership for Education. 2019. "Appraisal report. Tanzania. 2018." Available online at <https://www.globalpartnership.org/content/appraisal-report-tanzania-2018>

⁶ Ministry of Education, Science and Technology. "A report of the joint education sector review working sessions 18th - 21st September, 2017. Dodoma. <https://www.globalpartnership.org/sites/default/files/2019-06-report-2017-joint-education-sector-review-tanzania-mainland.pdf>

⁷ Government of Tanzania. "Education Sector Performance Report 2017/2018".

<http://siteresources.worldbank.org/INTTANZANIA/Resources/Educ-Sector-Perf-08.pdf>

⁸ Miller, C., K. Place, J. Tyler, G. Kafkas, and K. Boller. "Evaluability Assessment: Fursa kwa Watoto (FKW)." Cambridge, MA: Mathematica Policy Research, 2016.

