

# Differentiated Instruction in Multigrade Preprimary Classrooms in Kenya

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## Contents

About the Authors	i
Acknowledgments	ii
<b>Abstract</b>	ii
<b>Introduction</b>	1
<b>Background</b>	2
<b>Research Questions</b>	3
<b>Methods</b>	3
Participants	3
Procedures	3
Analytical Methods	4
<b>Findings</b>	5
Aspect 1: Differentiated Instruction During Whole Class Work	5
Aspect 2: Differentiated Activities During Small Group/Individual Work	6
<b>Discussion</b>	7
What Types of Differentiation Did Teachers Use?	7
How Was the Differentiated Instruction Aligned to the Goals of the Lesson?	7
How Did the Design of the Curriculum Enable/Constrain Differentiation?	8
How Did the Multigrade Configuration of the Classroom Enable/Constrain Differentiated Instruction?	8
<b>Limitations</b>	8
<b>Implications for Research and Practice</b>	9
<b>References</b>	10

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## **Abstract**

There is little evidence of how differentiated instruction is being implemented, if at all, in low- and middle-income contexts, which often have unique challenges such as availability of resources and large class sizes. In this paper, we present the results of a qualitative study in eight multigrade preprimary classrooms in Kenya. We used classroom observations and teacher interviews to understand how teachers approached differentiation during language and mathematics lessons, including understanding why teachers were making the moves we observed. All teachers differentiated instruction to some extent in our findings, and we provide detailed descriptions of the ways that teachers adapted content to fit the needs of their students. We also provide recommendations, including how to support teachers in creating activities that are appropriate for different abilities of students in the same classrooms, and suggest next steps for research in this area.

## Introduction

Differentiated instruction, “the process of modifying or adapting the curriculum according to the different ability levels of the students in one class” (UNESCO, 2004, p. 14), widely has proved to be an essential component of high-quality instruction that supports student learning. All children develop at their own pace and thus have different needs when learning new content (Tomlinson, 2000; UNESCO 2004; Shillady, 2013; Slavin, 1987; Subban, 2006). Reviews of various intervention programs at scale point to the importance of aligning instruction to the goals and needs of students (Hwa, Kaffenberger & Silberstein, 2020). In many ways, this alignment is seen as a key component of high-quality instruction and can be used with all subject areas, ages, and instructional models (Mathes et al., 2005).

Differentiation is also widely acknowledged to be difficult to use in the classroom. It can be applied in multiple aspects of instruction, such as ability grouping (e.g., teaching children by assessed skill levels), formative assessment to plan instruction, and adaptive teaching to adjust instructional strategies during lessons (Mulroy & Eddinger, 2003; Parsons et al., 2013; Slavin, 1987). The difficulty of applying differentiation is especially true for teachers in low- and middle-income countries (LMICs) where low levels of teacher education and low availability of high-quality materials have been exacerbated by the pandemic (Kett et al., 2018; World Bank, 2022). In fact, although many recommendations for quality instruction call for teachers to differentiate instruction, there is little rigorous evidence of existing practices in differentiation in LMICs. In this paper, we assert that if a government desires to introduce and sustain differentiation as a widespread practice, we must learn from what teachers are already doing and build from there.

Deficit approaches have been widely used to characterize education in LMICs around the world (Aikman et al., 2016). Seen through a deficit lens, teachers lack certain skills and knowledge needed for successful student learning to occur. Often, programs seeking to improve the quality of education deliver trainings and classroom materials based on research

and best practices from high-income contexts, instead of documenting and incorporating existing expertise (Piper et al., 2018). This study provides a counternarrative to this deficit approach with our underlying belief that teachers have skills and knowledge that are worth uncovering. These existing skills and knowledge can allow for approaches that build on teachers’ strengths and are effective and contextually relevant.

We sought to uncover natural teacher practices associated with differentiated instruction in preprimary classrooms in Kenya. We used classroom observations and teacher interviews to capture the ways in which teachers differentiate instruction, as well as teacher views on why they differentiated instruction. To do this, we took advantage of a unique opportunity within the Tayari Program, a Children’s Investment Fund Foundation (CIFF)–funded program implemented in preprimary classrooms in four counties in Kenya. In particular, we focused on multigrade classrooms (which combined children between the ages of 3 and 6 years old) as we theorized that differentiated instruction would be more likely to occur within multigrade classrooms than in single-grade classrooms.

Whereas we acknowledge that differentiated instruction involves more than differentiation by grade levels, we nevertheless assert that multigrade classrooms where differentiation might occur by grade levels represent an entry point into the practice. We also acknowledge that the Tayari case study was a special case, as teachers were provided with high-quality materials and training, and we used a purposeful sample to select teachers who were identified by program staff as the most likely to differentiate instruction. We did this because we were interested in identifying the beginnings of a differentiation practice that could be modified and adapted—to single-age classrooms, classrooms without high-quality materials, and classrooms with many children—but would still have its roots in Kenyan classroom practice. To do this, we used a case study methodology (Yin, 2017) that allowed us to examine a complex, real-life event (i.e., classroom teaching) to better understand how teachers make decisions about differentiating instruction in classrooms.

Through 16 observations in eight classrooms, we uncovered two ways in which teachers differentiated instruction. We then used data from our teacher interviews to ask teachers about certain parts of the lesson we observed and why they made certain choices around differentiation. From our findings, we made conclusions about what types of support teachers may need to effectively differentiate instruction in classrooms in contexts similar to that of Kenya.

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## Background

The case study described in this paper took place within the Tayari Early Childhood Program in Kenya (2016–2019). The larger aim of this program was to pilot and test the effectiveness of a high-quality early childhood education model, which promoted school readiness outcomes for children through the development and provision of teacher guides and student books for language, mathematics, social skills, and life skills, and through ongoing teacher support and training. Given the focus of our study on differentiated instruction, we turned our attention toward the multigrade schools within the Tayari program to better understand how teachers work around barriers to differentiation. The Tayari program did not provide teachers any guidance on how to differentiate; in multigrade classrooms, teachers were only provided with materials of the highest-grade level, which offered an opportunity to uncover teacher-initiated practices in differentiation.

The barriers in this and similar contexts include large class sizes, lack of systematic training for teachers in primary and preprimary, scarcity of resources, low attendance rates, and recently, school closures due to the pandemic. These barriers make it difficult for teachers to identify and instruct at different ability levels in the classroom. Perhaps because of these difficulties, many recommendations for high-quality instruction in LMICs refer to differentiated instruction as essential but fail to provide concrete recommendations to support teachers to differentiate (Sitabkhan & Platas, 2018).

Many researchers within high-income countries recommend providing differentiated instruction,

particularly for literacy instruction and for children learning in their non-native language (Hong et al., 2012; Taylor et al., 2000; Cheung & Slavin, 2012). Most research from LMICs focuses identifying learner needs through summative and formative assessment. Studies by Stern et al. (2018) in Indonesia and Owusu (2016) in Ghana describe pre-assessments as a method to identify learner needs. While informative as to how first steps toward differentiation can occur in LMICs, these studies do not address how teachers within a classroom can meet the needs of diverse learners.

A notable exception to this is Msimanga (2020), who provides concrete recommendations of how teachers can differentiate instruction in multigrade primary classrooms in South Africa. The authors used interviews to better understand the nature of instruction in nine classrooms. Specifically, the author found that teachers were likely to group students by grade. Teachers taught each grade group separately when topics in the syllabus were different. When topics were similar, teachers would instruct all the grades at the same time. When teaching all grades together, teachers shared different strategies they implemented, including using peer tutors, implementing small group instruction, and creating separate work for each grade level.

Another body of related research has described and evaluated interventions in which children who needed extra support were provided instruction outside of regular schooling (Gove et al. 2017; Banerjee et al., 2007). One technique gaining global recognition is Teaching at the Right Level (TaRL), developed by Pratham in India (Banerji & Chavan, 2020). TaRL uses regular assessments to group students by ability level and offer targeted support. For example, if students are struggling with letters, they are grouped with other similar-leveled students and receive instruction targeted to learning letters and sounds. This instruction could be during school or after school. Although they indicate how first steps toward differentiation can occur, these studies do not address how teachers within a standard classroom can meet the needs of all learners, not just struggling learners, at the same time. TaRL, for example, can

require extra teachers or facilitators to meet the needs of different groups of students.

In Peru, an intervention in preschool mathematics sought to do just this. The intervention supported teachers to use a simple method to ascertain the level of students in certain core concepts and then target instruction appropriately through the use of 45-minute sessions per week, as well as support from a visiting teacher assistant (Gallego, et al., 2017). However, we did not find research on differentiated instruction at the preprimary level in Sub-Saharan Africa. Thus, our study fills a gap in describing existing practices in detail by capitalizing on this case study of multigrade classrooms within the Tayari Program.

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## Research Questions

The research questions our study addresses are:

- How did teachers in multigrade preprimary classrooms in Kenya differentiate instruction during language and mathematics lessons?
- What types of differentiation did teachers use?

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## Methods

### Participants

To select teachers, we started by identifying all classrooms that had multigrade configurations, which we defined as classrooms with some combination of learners from Baby class (3–4-year-olds), Preprimary 1 (4–5-year-olds), and Preprimary 2 (5–6-year-olds) in the same classroom with the same teacher. We did not identify children's ages, but rather grade levels. We found 96 APBET (nonformal schools within Nairobi) classrooms and 39 public classrooms that met our parameters of multigrade configuration. Following this identification, we asked coaches to identify the high-performing teachers. We defined high-performing teachers as those who displayed strong classroom management skills and engaged all students. We focused our study on high-performing teachers with the rationale that these teachers would be more likely to differentiate instruction, thus giving us more meaningful data on what successful differentiation looks like within Tayari classrooms.

Based on these criteria, we reviewed recommendations of coaches and coordinators and chose 12 classrooms that were located in two regions where data collection would take place: a highly urban population (Nairobi) and a largely rural population (Laikipia). The final sample consisted of 8 classrooms, shown in Table 1.<sup>1</sup>

## Procedures

### Classroom Observations

The classroom observation was designed to capture all attempts at differentiation by a teacher during a language lesson and a mathematics lesson, with each lesson lasting approximately 30–45 minutes. The protocol was based on a review of several classroom observation instruments that capture teacher practice. We pulled from the Framework for Teaching by the Danielson Group for effective instruction and the CLASS-PK by Teachstone to identify constructs to measure. The final instrument asked researchers to note evidence for questions around differentiated instructional practices that were seen most commonly in the literature. There was a focus on how the teacher's guide and student workbooks were used for differentiation, given that we were interested ultimately in how teachers used these materials in multigrade classrooms.

The research team consisted of two international researchers and two local project staff. The two local staff members were the observers and captured details of what occurred during the lesson and the overarching themes that emerged. Both observers viewed the same two lessons, and then met at the end of the observation to compare evidence. The final data were entered into an Excel spreadsheet after the two observers discussed their observations and created one combined set of data entered per classroom.

### Teacher Interviews

The teacher interview was designed to capture teacher demographics and the rationale behind decisions made during the language and mathematics lessons. There were three categories of questions: (1) general background information, including years of

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<sup>1</sup> This included 8 teachers for data collection, 2 teachers for pilot data collection, and 2 back-up teachers.

**Table 1. Classrooms that were included in data collection.**

Teacher	County	Urban/Rural	Multigrade configuration	Teacher Gender	Number of students	Years of experience (as a multigrade teacher)
1	Nairobi	Urban	Preprimary 1/ Preprimary 2	F	17	3 years
2	Nairobi APBET	Urban (nonformal)	Baby/Preprimary 1/ Preprimary 2	F	28	2 years
3	Nairobi APBET	Urban (nonformal)	Baby/Preprimary 1/ Preprimary 2	F	20	5 months
4	Nairobi	Urban	Baby/Preprimary 1/ Preprimary 2	F	44	8 years
5	Nairobi	Urban	Preprimary 1/ Preprimary 2	F	39	3 years
6	Laikipia	Rural	Baby/Preprimary 1/ Preprimary 2	F	34	2 years
7	Laikipia	Rural	Baby/Preprimary 1/ Preprimary 2	F	11	4 years
8	Laikipia	Rural	Baby/Preprimary 1/ Preprimary 2	F	20	5 years

experience and certification; (2) general questions on multigrade teaching; and (3) specific questions about the lesson just observed, such as: *“I noticed that (all learners did the same activity, different activity) during the language/maths lesson. Do you do this regularly? Why?”* Both observers jointly conducted the teacher interview, and combined notes after the interview into one set of data per teacher.

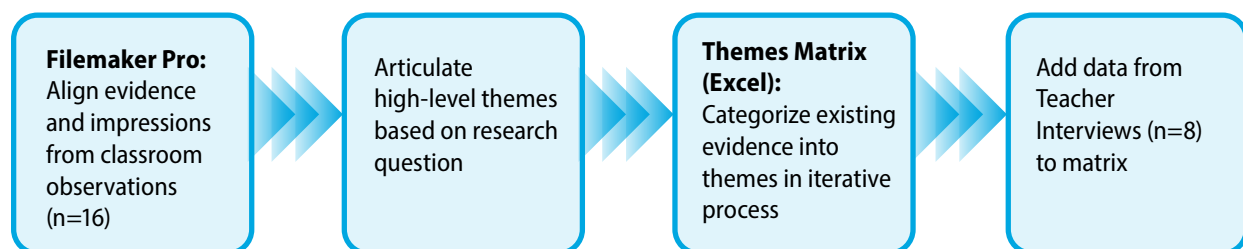
### Analytical Methods

Figure 1 details the methods the two international researchers used for analysis. In step one, after the data from the observations and interviews was entered into Excel, we created a database using Filemaker Pro, organizing the data according to the guiding questions in the observation instrument and blending the impressions and evidence that the two

observers had noted, and removing any impressions that did not have associated evidence noted.

In step two, we articulated overarching themes that were derived from the main research question: *In what ways did teachers in multigrade preprimary classrooms in Kenya differentiate instruction during language and mathematics lessons?*

In step three, we began the process of categorizing the data by creating a themes and data matrix in which we listed the supporting evidence for each theme (Maxwell, 2012; Miles & Huberman, 1994). From this matrix, we systematically categorized all the data for the 16 observations into the themes through an iterative process (even though the same teacher in the study taught both a language and a math lesson, the observations of the two content areas were treated as separate observations).

**Figure 1. Analytical Methods**



In step four, we categorized the teacher interview data into the existing themes to confirm the patterns we had found during the observations. We followed a similar process for the interview data, where we first entered the data into a database, and then created a matrix and categorized the data according to the themes we described. We connected specific observations from teachers with their explanation of why they made a particular instructional move for differentiation. This analysis allowed us to better understand the purpose of why teachers made these moves.

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## Findings

We found that all eight teachers we observed used differentiated instruction in some way, although the degree of differentiation varied. We organize this section around descriptive results detailing two aspects of this differentiation and the evidence around them from both the classroom observations and the teacher interviews. Throughout these sections, we present findings from across both observed age-group configurations (Baby/Preprimary 1/Preprimary 2 [3–6-year-olds] and Preprimary 1/Preprimary 2 [4–6-year-olds]). Following the results, we describe in the discussion section how these results allowed us to address each of the research questions.

### Aspect 1: Differentiated Instruction During Whole Class Work

We observed the ways in which students were engaged by the teacher during the whole class part of the lesson. We also observed seating arrangements to understand how teachers were grouping students. There were three specific types of student engagement.

#### Teacher Engages All Students, Differentiating Content

Teachers sometimes engaged all students during whole class instruction in language lessons. In one classroom where students sat at assigned desks by grade level, the teacher called on both Preprimary 1 and Preprimary 2 learners to identify sounds in the name of the “Learner of the Day.” During a later phonological awareness activity, where students

were asked to identify which of two words presented was longer, the teacher used shorter words for the Preprimary 1 students and longer words for the Preprimary 2 students. Other examples from both math and language observations included teachers asking students to identify smaller numbers versus larger numbers, to identify letters in their name versus random letters on a chart, and to count objects up to five versus up to nine.

Another method of differential engagement was asking certain groups of students to respond before others. For example, during a news-telling activity, a teacher first asked students in Preprimary 2 to share their news, and then asked students in Preprimary 1 to do the same. It could be that this teacher was using the Preprimary 2 students as a model for Preprimary 1 students to follow.

#### Teacher Engages All Students Without Differentiation

Many of the activities that the teachers used did not require differentiation for students to participate. For example, the whole group activity for one teacher was singing the ABC song, an activity in which all students could participate. Similarly, in a math classroom, all students counted from 1 to 30.

#### Teacher Engages Students of Only One Grade

It was common to see teachers engage only one grade of students during mathematics lessons. One teacher engaged only Preprimary 2 learners and a few Preprimary 1 learners during a lesson on identifying the numeral 17 and counting bottle tops, leaving the majority of the Preprimary 1 learners playing or sleeping at their desks. In addition, the teacher directed questions that were higher order, such as “what number comes next? How do you know?” only to the Preprimary 2 students without a parallel activity for Preprimary 1 students.

When we asked teachers about engagement during the whole class lesson, most teachers reported that they felt certain students needed more support than others. One teacher said that she decided whether to differentiate based on the content of each individual lesson. When asked how she met the needs of all the students in her class, she said that,

*I decided to involve all learners in reciting sounds which was easy even for the babies, then I went to capitalization, which was advanced, and in maths all learners involved in counting activities.*

Other teachers reported that they always differentiated instruction, especially for activities that involved writing, regardless of the content.

## Aspect 2: Differentiated Activities During Small Group/Individual Work

Differentiation was seen to a greater extent during small group/individual work versus whole class instruction. In language classrooms, of the lessons that had individual work (four out of eight), teachers provided differentiated activities in all of them. In math, all eight lessons had small group work, and in seven out of eight of them, teachers provided students with differentiated activities. For the most part, activities were targeted to all grades that were present (Baby, Preprimary 1, and Preprimary 2.)

In one classroom, a teacher was instructing students on the idea of taking away up to seven. When it was time for small groups, each grade level received a different activity. Baby class students were asked to count up to five objects. Preprimary 1 student were asked to count up to seven objects. Preprimary 2 students were engaged in the take-away activity up to seven. While the whole class was focused on the concept of taking away, the small group work for the Baby class and Preprimary 1 students was a counting activity. This meant that only the Preprimary 2 students were able to practice the concept that was the focus of the earlier lesson. This may have created an experience that was not coherent for the younger children, as they were given an activity that had no relation to what they were instructed on. When looking at it from this broader view, we found a majority of differentiated activities did not align with the whole class instruction.

In mathematics, in only two of the seven lessons where different small group activities were given were activities aligned to the objective of the lesson. Teachers often taught one concept targeted to the Preprimary 2 students, and then attempted to create activities that were easier for Baby and Preprimary 1

students, inadvertently creating new activities that did not match the lesson objective.

Similarly, for language, after instruction about three letters “X,” “Y,” and “Z,” the activities given to Baby class and Preprimary 1 students were modeling a letter not covered, “J,” while the Preprimary 2 students identified letters “X,” “Y,” and “Z,” as in the whole class lesson. In language lessons, since there were so few classrooms that did small group/individual work, it is difficult to see whether alignment during individual work time was more predominant in language lessons than in mathematics lessons.

During interviews, we asked teachers questions about small group and individual work. Many of their responses pertained to the difficulty in planning for differentiated activities. Several teachers commented on the amount of time it took to prepare materials for different groups of learners in advance. Many teachers were focused on achieving the right balance, in terms of difficulty of content. They were concerned that they were presenting content that was either too difficult for younger learners or too easy for older learners, and they tried to address this during small group/individual work time. One teacher said:

*Some learners are not able to understand the concept because it's above their level of understanding. When they are given different activities, learners want to do what other groups are doing.*

The seating arrangement of classrooms was important in that it supported the grouping by grade level. In six classrooms, students were seated according to grade-level groups. There may have been a few students that crossed over (e.g., one Preprimary 1 student with the Baby class students, or one Preprimary 1 student with the Preprimary 2 students), but largely the grade-level structure was maintained. Six out of eight teachers reported that they separated the children by grade. One teacher reported,

*It's easier when teaching especially small group activity... When you mix them, the lower level will always be left out because the Preprimary 1 and Preprimary 2 learners will be faster. But if you put them in grade specific groups, the activity has an equal level of difficulty for all of them.*

Additionally, one teacher reported that when she separated the children by grade, she put the younger children (Preprimary 1 and Baby) in the front row. By doing this, she said, you can “*support more, give out work easily and know their abilities.*” Another teacher explained her seating arrangement by grade level:

*I believe that every learner should be with their level mates. Because learners are at different levels. Preprimary 2 learners can make sentences when Baby and Preprimary 1 can't. Therefore, they cannot be mixed.*

Two teachers had children of different ages sit together based on the activity. One teacher felt that this “*helps to have the fast learners help the slow learners within their groups.*” Another teacher said that “*the seating position is determined by the activity and concept being taught. Sometimes I mix them. This avoids confusion.*” This same teacher was asked why, during individual work, children of the same grade level were all working on writing different letters. The teacher reported that this work had been given based on the ability of learners from observations and assessments that she had done with the students.

Overall, differentiation was frequently seen during the small group and individual work in both language and mathematics, and teachers revealed that they were carefully thinking about how to plan activities that met the needs of the different grade levels of students. However, analyses also revealed that teachers tended to create activities for the younger grades that were often not aligned with the objective of the whole class lessons, therefore causing a disconnect between what students learned and what they were subsequently asked to do.

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## Discussion

The results of this study show that the teachers we observed in Kenya used differentiated instruction during reading and math lessons in preprimary multigrade classrooms, despite challenges such as small physical classrooms and no prior training in differentiating instruction. We discuss the how the data address the research question, and then focus on how the findings shed light on the effectiveness of the differentiated instruction.

## What Types of Differentiation Did Teachers Use?

We found that teachers in this study made efforts to differentiate instruction according to the assigned grade level of the child. Many of these efforts required advance planning, implying that teachers were actively thinking of ways to meet the needs of all their students. In this way, instruction was aligned with one of the models of multigrade classrooms, where teachers teach a lesson according to one objective and then try to differentiate that content to meet the needs of the children. None of the teachers we observed taught lessons with different objectives to each grade level in their classroom.

We found that differentiation during whole class was different between mathematics and language lessons. We hypothesize two possible reasons. First, there were differences in content. Language content—such as the ABC song—in the Tayari materials may have been easier for students, so teachers may have felt they did not need to differentiate during whole class to engage all learners. In mathematics, where activities in the Tayari materials specifically focused on new content like addition and subtraction, teachers may have thought the content was too difficult for all students.

Second, there were differences in the structure of the lessons between the two content areas. For language, there were multiple activities per day. For example, one lesson may have had a news-telling activity, letter recognition, the ABC song, and a read-aloud. Among these many activities, there may have been some that needed differentiation and others that did not. For math, there was one whole class activity, which was used as a model for the small group work. The entire lesson, therefore, was built around one activity. Teachers had less room to decide whether and how to differentiate. The differences in the content and structure of the provided lessons hint at possible factors that can either enable or constrain the use of differentiation.

## How Was the Differentiated Instruction Aligned to the Goals of the Lesson?

The fact that differentiated instruction occurred, however, does not mean that it was always aligned. We viewed instruction as aligned when teachers' modified instruction continued to meet the learning

objectives of the lesson. This took the form of altering the difficulty levels of questions during whole class instruction and providing different small group and/or independent group work after the whole class lesson. These strategies allowed younger children with ways to access the content and learn at their level.

We viewed instruction as not aligned when these same strategies were used but did not meet the learning objectives of the lesson. Teachers provided alternative questions and/or activities to students according to their grade level, but these modifications did not provide the child with access to the content. Instead, these attempts at differentiation represented an effort to engage the child in some way, without necessarily considering the learning objectives.

### **How Did the Design of the Curriculum Enable/Constrain Differentiation?**

The lessons provided by the Tayari Project may have unintentionally constrained some teachers in their ability to differentiate, as the lessons were targeted to the oldest level of students. This forced teachers to use the given objective and find ways to make it easier for students of lower grade levels. Some teachers had more trouble with that, and “adapted” activities often turned into completely new activities.

This misalignment occurred more often for math lessons than for reading, possibly due to the nature of the content as well as the lesson structures used in the Tayari Project. Because there were multiple activities for reading, and not all of them had an independent work portion, it may have been easier to differentiate just a few activities for reading in a way that aligned with the objectives. In math, the structure of just one activity for the entire lesson either forced teachers to differentiate or not, and there was no option to choose certain activities to do it with that were more amenable to differentiating, and others that were not.

Because the lessons provided were always targeted to the highest level, the content may not have easily been simplified. Instead, teachers may have had more success if the content was targeted to the middle level of their class, with ways provided to either simplify or increase the difficulty level.

### **How Did the Multigrade Configuration of the Classroom Enable/Constrain Differentiated Instruction?**

The Kenyan preprimary classrooms that were included in this study all had students in both Preprimary 2 (5–6-year-olds) and Preprimary 1 (4–5-year-olds), with some classrooms also having Baby class (3–4-year-olds). These configurations enabled the teacher to differentiate instruction in a way that may not have occurred in single-grade classrooms. At the same time, the configurations led to the use of differentiated instruction exclusively according to the assigned grade levels of the students. While this may not be an ideal implementation of differentiated instruction, it represents the roots for future efforts to begin to introduce differentiation. This refutes the deficit narrative, so prevalent in this field, that teachers cannot do any differentiation because they lack the skills and knowledge to do it. Instead, there is positive evidence that, in certain classrooms, we see foundations of differentiated practices that could form a foundation for other teachers. Given the challenges facing these preprimary teachers, it is encouraging that some of the organization and planning necessary to differentiate was in place. A logical next step is supporting teachers to use this organization and planning to differentiate according to individual or group ability levels and create ways to provide access to the content for these different groups.

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### **Limitations**

There are limitations to this study. The sample size was small and thus does not allow for generalization to the population of multigrade teachers in Kenya. In addition, the teachers were chosen because they had demonstrated effective techniques for multigrade teaching as reported by supervisors. Our purposeful sample was drawn to align with case study methodology, which calls for studying a real-life event (successful teachers differentiating instruction), making this population of teachers even less representative of other multigrade preprimary teachers in Kenya. However, the purpose of this study was not to understand what typical multigrade teachers do but instead to examine a case study of

exemplar teachers to uncover and detail productive practices, understand ongoing challenges, and suggest productive next steps for supporting preprimary teachers in Kenya. Future studies should include a wider range of multigrade teachers in Kenya to better understand whether the practices found in this exploratory study are common and how they may differ when teachers are not high performing.

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## Implications for Research and Practice

Based on these findings, we present several recommendations for supporting more teachers to use differentiated instruction through both professional development and classroom materials. Importantly, we believe that our findings reveal the presence of the roots of a complicated practice that are encouraging and confirm our hypothesis that teachers are making efforts to differentiating instruction in difficult contexts.

First, our results show that almost all differentiation occurred according to assigned grade levels (Baby, Preprimary 1, and Preprimary 2). Although high-quality differentiation would ideally target instruction based on the child's ability rather than the child's age/grade level, we find grade-level differentiation to be a positive first step toward incorporating differentiated instruction in the classroom. As with any attempt to change teacher practice, supporting teachers to differentiate instruction by ability is a process that takes time. It may be that using assigned grade levels is a first step to encourage teachers, and that the pre-determined groupings allow teachers to be comfortable with the idea of supporting different groups of students doing different activities at the same time within the same lesson. This is especially important given the large class sizes and lack of resources in most classrooms. In addition, recent research in Tanzania (Jukes, Sitabkhan, & Tibenda, 2021) investigating social and cultural influences on instructional decisions found that teachers valued togetherness and fairness in their teaching. For some teachers, targeting instruction at students' achievement levels was seen as unfair and could undermine the class's sense of togetherness. Grade-level differentiation could be a first step to overcoming this perception.

Second, curriculum developers should be aware of the ways that materials, including teacher guides, may be used in multigrade settings. Within the Tayari classrooms, for example, we found that providing teachers with only the teacher's guide for the highest-grade level within their classroom was problematic. Teachers tended to teach the lesson as is, without much differentiation in questioning, during the whole group lesson. Many of the individual/small group activities that were differentiated were not aligned with the whole group lesson and objective, possibly causing a disconnect for younger students. For example, a whole group lesson was about putting together objects, a foundation for addition. In small groups, younger students were asked to model numbers with plasticine, which is cognitively a very different task for students than putting together objects. Therefore, curriculum developers should consider the needs of multigrade teachers and create materials accordingly. For example, whole group lessons could include questions at two or three different levels, providing guidance on harder and easier questions. During small group activities and/or individual work time, materials could provide guidance on two or three levels of activities aligned with the same objective. For example, taking the putting together example from earlier, the number of objects being put together can vary according to the age/level of the child, but the overall objective remains the same.

Third, teacher trainings can address the perceptions that teachers have about on whom to focus the most attention. In our findings, we saw variation in this. Some teachers tended to focus on the oldest students, as they were preparing for Grade 1 entry. Other teachers tended to focus on the younger students, as they needed the most support. Neither is wrong or right. Teacher trainings can help teachers understand how to vary support according to the activity and needs of the students.

This study attempted to disrupt the deficit model that is often behind many early childhood interventions in LMICs. Instead of assuming that teachers do not know how to differentiate instruction, and developing an intervention based on research from high-income countries using differentiated instruction, we sought

to reveal existing practices that teachers are already using. We documented several practices that, while not perfect, were encouraging first steps toward a complicated practice. We hope that future research

can document more of these existing practices, which can be modified to address the challenges teachers face and expanded to other teachers in similar circumstances.

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