

Teaching New Literacies and Inquiry: A Grassroots Effort to Bring About Educational Change in Kenya

Shea N. Kerkhoff, Hiller A. Spires, Peter Wanyonyi

Teachers in Kenya explored inquiry-based learning as a way to teach new literacies in schools with a high student–computer ratio during the New Literacies Teacher Leader Institute.

A tree has roots in the soil yet reaches to the sky. It tells us that in order to aspire we need to be grounded, and that no matter how high we go it is from our roots that we draw sustenance. (Maathai, 2007, p. 293; Wangari Maathai is a Kenyan environmental pioneer and Nobel Peace Prize winner)

As a result of global digital transformations, students need new literacies to fully participate in contemporary society (Leu, Kinzer, Coiro, Castek, & Henry, 2019). New literacies include the additional literacy practices needed as a result of the increase in digital technologies. Specifically, Leu and colleagues (2019) argued that “new technologies such as the Internet and other ICTs [information and communications technologies] require additional social practices, skills, strategies, and dispositions to take full advantage of the affordances each contains” (p. 327). Wangari Maathai’s (2007) quote above implies that new learning is grounded in the known. Following this analogy, new literacies do not replace traditional literacy but rather build on what we know about teaching students reading, writing, and thinking. Maathai’s quote also implies the power of grassroots efforts for educational change. In this article, we describe how local Kenyan teachers prompted professional development (PD) on new literacies within their community.

Contemporary Issues in Education in Kenya

In light of globalization, students in rural Kenya need to learn similar new literacy practices as students in

other countries learn. Accordingly, the Kenyan government mandated that all students graduate digitally literate (Ministry of Education Science and Technology, 2014). In 2013, Kenya implemented the Digital Literacy Programme, providing a tablet for each grade 1 student with the national curriculum uploaded. The goal was to innovate teaching and learning through technology integration. However, not all schools had received tablets at the time of this study, and not all schools that received tablets continued to use them due to Wi-Fi and technical difficulties (Wanzala & Nyamai, 2018).

Piper, Oyanga, Mejia, and Pouzevara (2017) found that the Digital Literacy Programme did not improve reading outcomes. The researchers looked at oral reading fluency, reading fluency, and comprehension but did not look at new literacies. Similarly, a review by Commeyras and Inyega (2007) found that Kenyan instruction focused on foundational reading skills; neither digital nor new literacies were mentioned in the research. Other challenges

SHEA N. KERKHOFF is an assistant professor in the Department of Educator Preparation and Leadership at the University of Missouri–St. Louis, USA; email kerkhoffs@umsl.edu.

HILLER A. SPIRES is a professor in the Department of Teacher Education and Learning Sciences at North Carolina State University, Raleigh, USA; email haspires@ncsu.edu.

PETER WANYONYI is the founder and director of Hope Education Centre, Kitale, Kenya; email peterwanyonyi@gmail.com.

in Kenyan education contexts include overloaded curriculum, large class sizes, disproportionate resource–pupil ratios, poverty, and lack of formal literacy (Mutai, 2012). The Ministry of Education, Science and Technology’s (2014) plan addresses many of the challenges by calling for rigorous and relevant pedagogies.

To employ new pedagogies and technologies, teachers need training. According to Lowe and Prout (2019), inservice training in Kenya has been criticized for being top-down, one-size-fits-all, overly bureaucratic, and “largely theoretical, making it difficult for teachers to connect theory with practice” (p. 58). According to our conversations with teachers, most government-sponsored PD is delivered in Nairobi and not accessible for rural teachers. In fact, Ngware (2013) reported that only 26% of teachers in Kenya had participated in PD.

To overcome these challenges, teachers in rural Trans-Nzoia County worked with local Kenyan leader Peter Wanyonyi (third author) to form a grassroots effort to seek out training on new literacies. Peter currently serves as the founder of a primary school and the chair of the Board of Governors for three schools in the area. Shea (first author) developed the initial relationship with Peter through her work with Going Global, Inc. and was approached about the training. Shea and Peter invited Hiller (second author) to collaborate with them to bring her New Literacies Teacher Leader Institute (NLI) to Kenya in June 2018.

Continuing the grassroots effort, five teacher leaders publicized the PD and organized the training logistics. The teacher leaders communicated with local teachers throughout the county to spread the word about the free PD opportunities and communicated with Peter what training topics teachers believed were of top priority. The teacher leaders provided leadership throughout the institute and continued mobilizing for change after the event, which we elaborate on in the Discussion section.

NLI

Created a decade ago, the NLI provides PD for teachers using an inquiry-based learning approach with emphasis on new literacies (Spires et al., 2009). Before being conducted in Kenya, the NLI was conducted with over 3,000 teachers in the United States and China (Spires, Kerkhoff, & Zheng, 2018; Spires, Paul, Himes, & Yuan, 2018).

The vision of the NLI is for teachers to scaffold new literacy practices as students take part in inquiry learning that is student-centered, socially significant, and academically rigorous. To scaffold teaching and learning new literacies from an inquiry stance, the NLI uses the

Project-Based Inquiry (PBI) Global instructional model (Spires, Kerkhoff, & Graham, 2016; Spires, Kerkhoff, & Paul, 2020). The model consists of five iterative phases: (1) Ask a compelling question, (2) gather and analyze sources, (3) creatively synthesize claims and evidences, (4) critically evaluate and revise, and (5) publish, act, and share. Each phase of the process is scaffolded so participants gain a deep and practical understanding of PBI Global. In order for the vision of the NLI to come to fruition, teachers need specialized PD for their context, in this case rural Kenya.

Conceptual Frameworks Underlying the NLI

The NLI uses new literacies and inquiry as conceptual frames for the design, delivery, and content of the PD.

New Literacies. New literacies require the literacy “practices, skills, strategies, and dispositions” (Leu et al., 2019, p. 327) necessary in the 21st century to respond to and participate in a digital world. We view new literacies as a broad construct that encompasses online reading comprehension (Leu et al., 2019), internet research and inquiry (Dwyer, 2016), critical media literacy (Mirra, Morrell, & Filipiak, 2018), and the use of digital tools (Spires et al., 2020).

As students engage in reading digital texts, they must critically evaluate the credibility of sources and the logic of arguments. A quantitative case study of incoming first-year undergraduate students in Kenya revealed that students had limited knowledge of sourcing strategies (Kimani & Onyancha, 2015). Research has suggested that some of the new literacies practices/skills that students need to be able to do include the same practices/skills needed for inquiry, namely, identifying a research question, locating reliable sources online, reading through a critical lens, constructing arguments from multiple sources, and communicating using appropriate modes (Coiro, Coscarelli, Maykel, & Forzani, 2015; Kimani & Onyancha, 2015). Subsequently, these practices are foundational to inquiry-based learning.

Inquiry-Based Learning. Owens, Hester, and Teale (2002) asserted that inquiry-based learning is an effective way to teach new literacies. In addition to acquiring new literacies through inquiry-based learning, students learn content through authentic projects in a learner-centered environment (Spires et al., 2020). Although inquiry as an instructional model has been researched in science education in Kenya with promising results (Okpala & Onocha, 1988), use of inquiry and other

learner-centered methods is not widespread (Gudu, 2015; Metto & Makewa, 2014).

Current teaching styles in Kenya vary. Ngware, Oketch, and Mutisya (2014) found that the three major teaching styles were recitation, teacher questioning of the whole class, and individual work. Mutai (2012) found similar results on teaching styles and added that “teachers ask ‘recall’ questions more often than ‘thought-provoking’ ones. Higher levels of thinking are required if pupils and adults are to solve problems that demand reflective decision-making” (p. 328). At the heart of inquiry is intellectual work that has depth, duration, and complexity with the aim of engaging students toward the creation of knowledge and problem solving (Spires, Himes, Paul, & Kerkhoff, 2019). Adding inquiry-based learning to the repertoire of teaching methods offers a learner-centered method to develop problem-solving and decision-making skills, as Metto and Makewa (2014) and Mutai called for in Kenya.

Design Principles and Structure of the NLI

When designing the PD, facilitators considered what teachers had requested, the practicality of what teachers could implement in their contexts, and how to assess teachers’ perceptions formatively during the PD. We began with an initial community-building activity (see Figure 1 for the full itinerary). Participants and facilitators created “I Am From” poems that honored participants’ roots to their families and local cultures in Kenya (see Figures 2 and 3).

Each day was divided into five parts: Looking Up and Out, Digging Deeper, Cool Tools and Hot Topics, Design Studio, and Wrap-Up. In the Looking Up and Out sessions, facilitators led interactive presentations on inquiry-based learning, digital literacy strategies needed for inquiry, and supporting multilingual learners. Digging Deeper sessions were small-group discussions differentiated by grade levels and academic disciplines (e.g., early childhood, Swahili, science), in which teachers could dig deeper into the topics presented or ask questions related to their contexts. These smaller settings allowed teachers a space to follow their lines of inquiry and learn from one another. For example, the early childhood group initiated discussion of the professionalization of early childhood, a topic tangential to the planned PD but important to the teachers assembled. They took advantage of the time together to form their own professional organization because they wanted to continue to improve their teaching and support one another after the PD.

For Cool Tools and Hot Topics, participants chose what breakout session to attend. Hot Topics included NLI

facilitators’ areas of expertise, and Cool Tools provided hands-on opportunities for teachers to practice using laptops and digital tools, such as Piktochart and Google Slides. During Design Studio, the facilitators modeled instruction as the participants took the role of students and experienced inquiry-based learning. Engaging in experiential learning in which teachers participate in the instructional strategies that can be used in pre-K–12 classrooms is an effective way to increase pedagogical expertise (Lucas & Villegas, 2011). We divided teachers into six-person teams and conducted the PBI Global process during Design Studio (see Figure 4). We modeled scaffolding and formative assessment for the participants throughout each of the PBI Global phases.

We gave participants the option of designing their own compelling question on the predetermined topic of deforestation, which is an environmental area of concern in Kenya, or using a question that the NLI team had created beforehand. Because of time constraints and being new to inquiry-based learning, all participants decided to use the prepared compelling question, Why should people care about cutting down trees in Kenya? To build and activate prior knowledge, we used a common read about deforestation entitled *Seeds of Change: Wangari’s Gift to the World* by Jen Cullerton Johnson. The picture book is about Kenyan environmentalist Wangari Maathai. We chose this book to keep the content of the PD rooted in the local context of the teachers. Participants were knowledgeable about Maathai and enthusiastic about environmentalism.

The teams worked collaboratively on the inquiry process, answering their compelling question and then presenting their digital products at the Design Studio Showcase on the last day. Teams used PowerPoint, Google Slides or Piktochart to digitally represent the answer to their question (see Figure 5 for a sample Piktochart diagram). For the Design Studio Showcase, teachers could invite principals, community leaders, and family members to celebrate the learning (see Figure 6).

Qualitative Case Study Methods

In this qualitative case study (Stake, 2000), we explored teachers’ perceptions of new literacies in Kenya after participating in the NLI. Two research questions guided the study:

1. What do the Kenyan teachers perceive as major strengths and challenges of teaching new literacies and implementing inquiry-based instruction in their classrooms?

Figure 1
Itinerary for the Professional Development

When	Goal(s)	Activity(ies)
Before arrival	Planning meetings via Skype and distribution of surveys	
Day 1	Talk with teachers and gain an understanding of the context.	<ul style="list-style-type: none"> ■ Tour three schools and meet teachers, leaders, and students.
Day 2	Introduce one another and the Project-Based Inquiry (PBI) Global model. Build relationships.	<ul style="list-style-type: none"> ■ Welcome by Peter Wanyonyi and introduction of dignitaries ■ Introductions of the New Literacies Teacher Leader Institute team and participants through "I Am From" poems ■ Beginning With the End in Mind: Overview of the institute's framework and agenda ■ Tea ■ Looking Up and Out: Introduction of new literacies, inquiry-based learning, and the PBI Global model with example products ■ Digging Deeper: Small groups by grade level discuss how to customize PBI Global for teachers' contexts. ■ Lunch ■ Cool Tools and Hot Topics: Breakout sessions <ul style="list-style-type: none"> ■ Collaborating With Google Suite ■ Creating Infographics ■ Motivating Learners ■ Dialogic Teaching ■ Design Studio: Teachers experience the process of PBI Global in groups of six. Each team decides on a compelling question. ■ Wrap-Up: Using a Plus/Delta T-chart, share out positive aspects that should continue the next day (+) and what should change (Δ). ■ After-Hours Dabbling: Begin gathering and analyzing sources if you have time.
Day 3	Model and scaffold inquiry-based learning.	<ul style="list-style-type: none"> ■ Review: Welcome and review of the learning from yesterday ■ Design Studio: Gather and analyze sources. ■ Looking Up and Out: Literacy strategies for inquiry ■ Tea ■ Digging Deeper: Small group discussions by grade level about literacy strategies in teachers' contexts ■ Cool Tools and Hot Topics: Breakout sessions <ul style="list-style-type: none"> ■ Collaborating With Google Suite ■ Creating Infographics ■ Motivating Learners ■ Dialogic Teaching ■ Lunch ■ Design Studio: Synthesize claims and evidence. Design an infographic using Piktochart (plan A if Wi-Fi works) or PowerPoint (plan B if Wi-Fi does not work). ■ Wrap-Up: Using a Plus/Delta T-chart, share out positive aspects that should continue the next day (+) and what should change (Δ). ■ After-Hours Dabbling: Continue designing your infographic.

(continued)

Figure 1
Itinerary for the Professional Development (*continued*)

When	Goal(s)	Activity(ies)
Day 4	Celebrate new learning.	<ul style="list-style-type: none"> ■ Review: Welcome and review of the learning from yesterday ■ Looking Up and Out: Supporting learning in English for speakers of other languages ■ Tea ■ Design Studio: Finalize your infographic using Piktochart (plan A if Wi-Fi works) or PowerPoint (plan B if Wi-Fi does not work). ■ Lunch ■ Design Studio Showcase: Gallery walk of products ■ Culminating Activity: Teacher leadership ■ Certificate Ceremony ■ Wrap-Up: Survey evaluation and reflection

Figure 2
Example of a Teacher’s “I Am From” Poem During the New Literacies Teacher Leader Institute

I am from Kenya,
 I am from the place of peace,
 I am from the place of trees.
 I am from a great family,
 I am from a family that eats together,
 I am from a family that sings praise and
 Sometimes dances when filled with joy.
 I am from a school of children who suffer neglect from
 their parents,
 Parents who do not have supplies to provide for their
 children’s daily needs.

2. What strategies do these teachers perceive they will implement in their classrooms?

Research Context

Trans-Nzoia County is home to 1.2 million people and is the primary agricultural region of the nation. Many teachers walk hours to and from school; likewise, many participants walked hours to take part in the three-day PD. During PD, participants learned about new literacies and inquiry-based learning.

Participants

Participants comprised 49 teachers who completed the PD and consented to be a part of the study. They represented a range of grade levels taught, from kinder 3 to form 4, or ages 3–18. Participants also represented diverse content areas, and many taught multiple content

Figure 3
A Secondary School Teacher Sharing Her “I Am From” Poem With the Group



Note. The color figure can be viewed in the online version of this article at <http://ila.onlinelibrary.wiley.com>.

subjects, such as Swahili and mathematics. See Table 1 for participant demographics.

Data Sources and Collection Process

Data sources were pre and post open-response surveys, transcripts from focus groups, transcripts from interviews with selected participants, and participant-generated artifacts developed during the PD. Surveys were developed and administered prior to the NLI to assess areas of teacher interest. Post surveys asked about participants’ satisfaction with the PD and for

Figure 4
Team Members Collaborate on Their
Project-Based Inquiry Global Activity During
Design Studio



Note. The color figure can be viewed in the online version of this article at <http://ila.onlinelibrary.wiley.com>.

participants to reflect on the content and process of the PD. Four focus groups of 10 to 15 teachers each were organized by grade level. For the one-on-one interviews, 10 teachers who represented a range of content areas and grade levels within the larger group were interviewed using a semistructured interview protocol. Follow-up interviews were conducted with four teachers the following year. All focus groups and interviews were audio recorded and transcribed verbatim.

Data Analysis

We analyzed the corpus of data using Braun and Clarke's (2006) six-step thematic analysis protocol. Collaborating in Google Drive, we first open-coded by highlighting data that answered the research questions, and created codes in comment boxes that summarized the highlighted data. During this round of coding, we paid careful attention to participants' specific contexts and cultural perspectives. Example codes were importance of learner-centered teaching to reach underperforming students; infrastructure challenges of implementing ICTs; desire for more ICT training; and teaching the whole child, including academic, emotional, psychological, and spiritual learning. We then looked for patterns across participants and grouped codes into seven preliminary themes. A final round of analysis resulted in synthesizing the seven preliminary themes into three discrete yet comprehensive overarching themes.

Findings

The findings, which answered our two research questions, comprised three themes: (1) Shifting to Learner-Centered Pedagogies: "I'm inspired to improve my teaching" (research question 1); (2) Change Is Slow but Coming: "We need to be empowered with more information about new technologies" (research question 2); and (3) Strategies for Teaching New Literacies: "Creating is better than just talking" (research question 2).

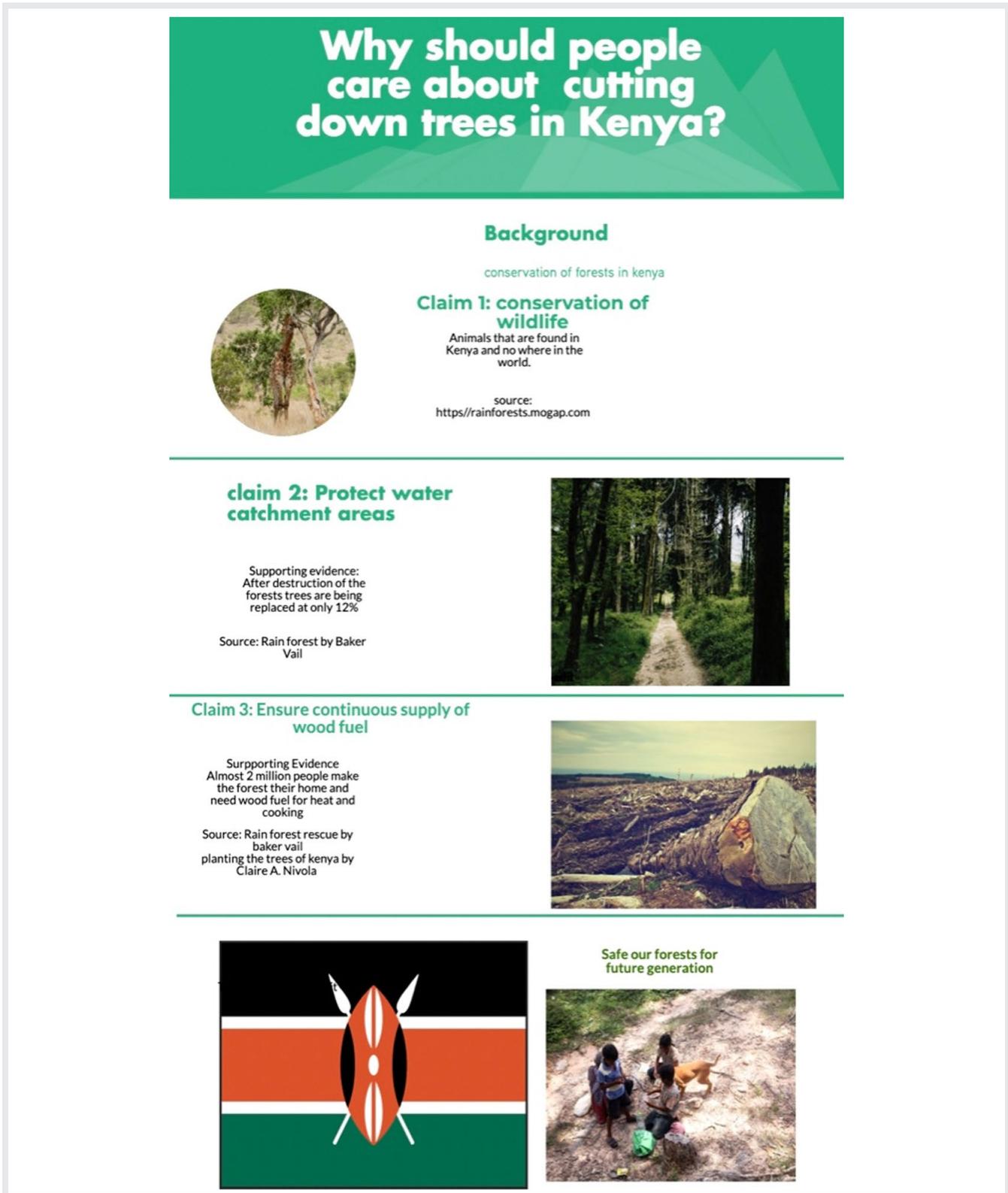
Shifting to Learner-Centered Pedagogies: "I'm Inspired to Improve My Teaching"

Participants believed that inquiry-based teaching could be applied in their classrooms as a way to implement the top-down focus from the government on learner-centered teaching. The shifting paradigm from teacher-centered to learner-centered in the Kenyan education system provided a space for teachers to consider PBI Global as feasible in their context. A teacher in the interview stated that the new curriculum in Kenya and the shift from teacher-centered to student-centered learning is "best."

One participant reflected in the open-response survey, "What we've been doing here, generally, has been a teacher-centered type of teaching. But from the professional development, I've learned that we can involve pupils right from the beginning of the lesson and integrate them in the teaching process." Some participants saw inquiry as a way to reach all students, as opposed to the traditional lecture that they perceived as only helping the brightest and most motivated. Another participant noted, "Inquiry is a probing question put to learners to help them think further on what they are to learn; it helps the lesson to be learner centered and capture pupils' attention." In this statement, the participant labels inquiry as learner-centered, adding that this type of teaching could also help with engagement by capturing learners' attention. Similarly, another participant shared that the potential in inquiry to increase learner engagement could help reach learners whom traditional methods left behind: "Maybe we motivate all the pupils, the last one will also have that morale and encouragement to move on."

In addition to seeing learner-centered and inquiry-based teaching as relating to engagement, another participant related this type of literacy instruction to encouraging creativity: "It is just good to teach them, yes, but let us also encourage them to be creative, to come up with their own ideas, and focus on their interests, more than what we would want them to do." Creativity is an important component of both inquiry

Figure 5
 Example of an Infographic by Team 12, Created Using the Digital Tool Piktochart



Note. The color figure can be viewed in the online version of this article at <http://ila.onlinelibrary.wiley.com>.

Figure 6
 Participants Engaging in the Design Studio Showcase on the Last Day of the New Literacies Teacher Leader Institute



Note. The color figure can be viewed in the online version of this article at <http://ila.onlinelibrary.wiley.com>.

and new literacies as students design their investigations and design projects that showcase their new knowledge. In addition, the previous quote demonstrates how inquiry can encourage learner agency. Another participant noted,

Our syllabus is a bit fixed, so our learners rarely have the opportunity to bring in their own ideas, their own way of looking at things. If we could have a syllabus that is a bit flexible, that would allow our learners to be more creative and not just feed them with content. If we allow them to be more creative, I think it will really help them being professionals in the future.

As stated earlier, with a fixed and overloaded curriculum, some participants felt that the potential for inquiry was limited. The national curriculum is mandated, and teachers reported extending the school day to cover the mandated lessons. A participant shared in the interviews, “Some of the challenges here in Kenya are we strictly follow the rules of Teachers Service Commission. There are things that they strictly want the teachers to adhere to, which when you follow, they are not necessarily important.” This participant was critiquing the mismatch between the curriculum and what the teaching profession considers important. The participant went on to explain that not everything in the curriculum matches what individual learners need. He felt that if the curriculum could be “specialized,” or personalized to match learners’ needs, that it would “work out better.” Inquiry would allow for learners to specialize in certain topics in a way that the curriculum

Table 1
 Participants’ Demographic Information

Demographic	Number of participants
<i>Gender</i>	
Female	29
Male	20
<i>Grade level</i>	
Early childhood	8
Primary	26
Secondary	11
No response	4
<i>Highest education level</i>	
High school /A level	2
Early Childhood Development certificate	2
College	6
University degree	21
No response	18
<i>Years of experience</i>	
0–5	20
6–10	10
11–15	6
16+	13

currently did not provide, but with the mandated lessons already taking more than the allotted time, there was not a perceived place for inquiry. In addition, many participants noted that their schools did not have Wi-Fi, making inquiry using internet research challenging.

Change Is Slow but Coming: “We Need to Be Empowered With More Information About New Technologies”

Many of the issues on new literacies instruction cited in research on Kenya from before the Digital Literacy Programme still hold true today (see Ogembo, Ngugi, & Pelowski, 2012). Participants described large class sizes and a lack of resources in rural areas, making teaching

new literacies to all students particularly challenging. A school leader stated,

A few schools in big cities started to teach the learners how to use technology because there are some computers or tablets in schools in cities. The rest of the countryside, which is the majority, were left out of the tablet program.

Additionally, participants reported a lack of Wi-Fi and electricity, training for teachers, and technicians to keep machines running. One participant summarized these issues by stating, “One, we have no internet in our schools. Two, the Ministry of Education has provided the tablets to the learners, but you find we don’t have the technicians, and the teachers have not been trained in that field.”

However, other challenges that have not been well documented in research were discrimination based on tribe affiliation at the school and national levels. In fact, one participant reported attacks on teachers in schools based on ethnic or religious affiliation. He stated that a challenge is “attacks in schools where they target teachers, maybe from a certain region or from a certain religion.” At the national level, schools that serve children from the same tribe as the president were perceived as being allotted more technology.

In addition to challenges, assets that have not been well documented in research also were found. Teachers were holding extra school hours without pay to help students work through the curriculum at their own pace. In addition, teachers attended our three-day training without pay because of their enthusiasm for lifelong learning, their desire to learn technology, and their aspiration to bring about the changes in education that the government is calling for.

The teachers believed in the possibilities that new literacies could “awaken” for their learners and for their country. In the focus groups, a participant shared that her goal was to “be relevant with emerging challenges in a fast-changing world” to “benefit the learners.” One participant shared the possibility that ICTs can help improve the country:

We need to be empowered, to be taught how to apply it, like when you are using PowerPoint, how to use it in the classroom. Because with us, we are still using the blackboard with chalk. But with the changing system of new technology, maybe then we can also improve our land.

Another participant added that Kenyan teachers can partner with educators in the United States. She said, “We don’t have those [new literacies] skills, so we can partner, and we could learn. We could discuss

some ideas.” In the follow-up interviews, a participant shared,

We are still trying to master the infographics, so it has been of great help. Every time you come, there is something new that we are learning. At times, you may feel like “I know how to operate it,” but to discover there is something that you do not know. We are always learning, so we really appreciate that, and we hope you still come back.

All in all, participants yearned for more training, as this participant shared that she still wanted to learn more about ICT integration in learning.

Strategies for Teaching New Literacies: “Creating Is Better Than Just Talking”

Across data sources and participants, we noticed three strategies related to new literacies instruction that participants perceived would be useful in their particular teaching contexts: scaffolding, group work, and multi-modal presentation. During an interview, a participant noted scaffolding as a new strategy that he had learned during the PD. He explained it this way:

Here in Kenya, education is a bit cumbersome. We give pupils raw material, which they have to digest themselves, but what I have seen with you, it is not that raw material. You try to demonstrate everything so that it becomes easier for a pupil to understand. So, it is a method that we should continue.

Other participants mentioned specific scaffolds that the team had modeled during the PD as strategies that they would implement in their classroom, such as the OPVL (origin, purpose, value, limitation) method for evaluating sources and the I Do, We Do, You Do strategy when introducing a new skill.

Collaborative group work was the second strategy mentioned by participants. Referring to conducting inquiry in groups, a participant noted that a strategy she uses for group work is putting a student who has already met the learning standard in each inquiry group. One participant reported using small groups in his large classes. In his class of 60, he asked students to work in groups of 10. Another participant said, “You find maybe five or so sharing one laptop.” Although this shows the strategy of group work to make the most out of scarce resources, the participant went on to say that five people sharing one laptop can be challenging when making sure that everyone has a chance to learn.

In addition, participants believed that technology would provide them opportunities to teach not only new literacies but also content through multiple modalities

and that this would help students learn the material more quickly.

When you are using the [LCD] projector, you put the picture on the wall. We are able to read what you are teaching. We see, and we also hear, so we are combining the two factors, and that word can stick well to our mind. So, we saw that it's easier for the learners.

Another participant echoed these sentiments:

In my subject area [physics], most of the concepts are abstract, so I'm learning I can make the content easier by having my learners visualize the abstract content. Right now, we are learning how to use Piktochart, so I can convert my notes into visual photos, charts, and images that will enable the students to understand.

Participants believed that having visual aids would help students learn the material better, especially when instruction was in English and when the content related to concepts that the students had not experienced, such as snow, volcanoes, and kangaroos. One participant noted that ICTs could help make education more equitable: "We can integrate ICT and teaching so that even a slow learner can understand what you are teaching." This participant, using the discourse of her context, saw the potential for technology to support the differentiated needs of her learners.

Regarding literacy in general, participants reported using an inquiry question with early grades as a reading strategy. Teachers learned this strategy from the Tusome initiative (Piper et al., 2017) and would ask students a guiding question to set a purpose for reading that students would think about while reading a text. A participant noted the affordances of using the inquiry question as a reading strategy, encouraging students "to critically think about the topic/scenario at hand, to answer questions prior to the main lesson to arouse their interest, and to ask any questions they may have." Participants were able to build on their knowledge of inquiry as a before-reading strategy to add inquiry as an after-reading strategy that integrated writing, as participants saw how one inquiry question could help students synthesize across texts and write a response to the question based on their reading of themed books.

During follow-up interviews, teachers reported exciting news. One school that had tablets but had not used them with students before the PD were now teaching students how to use the tablets and having students access texts to read on the tablets. Overall, the participants in our study embraced the shifts to teaching new literacies and inquiry, which helped support instructional change in their schools.

Key Insights and Conclusion

As we reflected on the PD experience we had in Kenya and the specific results of our study, we derived three key insights to share with readers of this article and to guide our continued work with the teachers. We believe that these insights have implications not only for the Kenyan context but potentially for other cultural contexts as well.

Key Insights

The first insight relates to building community and embracing the cultural context of the PD. A vital issue for U.S. researchers who study Kenyan education is to understand that PD must be adapted to the Kenyan culture and contexts in order for educational changes to be internalized and then scaled. This understanding is vital for anyone promoting change with teachers in cultures and contexts other than their own. Ample time must be spent on creating a sense of community between the participants and the facilitators. This can be done before traveling (e.g., we held Skype planning sessions), during the PD session (e.g., we asked for participant feedback at least once a day), and following the PD (e.g., through continuing partnerships). Planning sessions are key to make sure that the participants trust the facilitators to understand their needs. In our planning sessions, we learned that sharing meals and acknowledging administrators/leaders are important to community building in Kenya, so we spent time during the PD to incorporate these elements alongside the academic content. After the PD, we collaborated on next steps for supporting the teachers' desired changes. Darling-Hammond, Hyler, and Gardner (2017) claimed that PD should not be a one-off but sustained over time. This is a central tenet of our work.

The second insight focuses on designing PD as both practical and aspirational. As the PD facilitators, we modeled strategies that teachers could implement in their classrooms immediately, as well as approaches that they could use when they acquired technological resources. For example, facilitators modeled strategies rooted in inquiry, such as K-W-L, inductive activities, and collaborative learning. We modeled multimodal presentations by drawing on chart paper and using video embedded in Google Slides. We embraced the tension between national mandates and the everyday realities of classroom life (Lloyd, 2015) to make the PD relevant and sustainable.

The third insight deals with teachers' organic and recursive applications of what they learned in the PD. Garcia and O'Donnell-Allen (2015) related the recursive nature of professional learning to practicing yoga: pose, wobble, and flow. First, we learn a pose, then we wobble

as we learn how to maintain the pose, and then we flow as the pose becomes second nature. We are explicit with teachers that learning new pedagogies, as in yoga, is difficult work and that there is not one right way to apply inquiry-based learning. We encourage participants to adapt to their students and local contexts. The Digging Deeper small-group discussions during the PD provided a space for teachers to debrief the facilitators' presentations and make applications to their own classrooms.

Continuing the Work

Since the NLI was conducted, the partnership has evolved to include additional dimensions. Teachers' questions in the Digging Deeper sessions led to creation of an early childhood professional organization. Hiller and Peter have conducted Skype sessions with early childhood teachers to explore more support for professionalization. The group drafted a position paper outlining the unique needs of early childhood teachers in Kenya and submitted it to the county governor. Peter participated in a symposium in the United States to describe the work that is being done in the Kenyan villages. We conducted technology drives, with older smartphones and laptops being refurbished for distribution among the teacher participants. Although these efforts may seem minimal in the face of insurmountable need, we have witnessed firsthand that small steps yield targeted transformations within the school system. As our findings demonstrate, change is slow but coming.

In 2021, Shea plans to take 15 undergraduate and seven graduate students to Kenya to continue the partnership as part of a study abroad experience. This experience will encourage a cross-cultural exchange of ideas between the U.S. students and the Kenyan teachers, yielding outcomes that are mutually beneficial for both groups. For instance, the students have knowledge about computers and smartphones that they can share with the teachers, and the teachers have knowledge about classroom management and instruction that they can share with the students. Future research will focus on how new literacies and inquiry-based learning are adopted in the Kenyan schools and the uptake of learning from the study abroad experience in students' future classrooms.

Conclusion

The need for training on new literacies in Kenya is sizable, but the desire for learning and the passion for teaching are also immense. When even one teacher develops new knowledge and skills, the results are exponential, as the teacher works with hundreds of students over a career.

TAKE ACTION!

1. Conduct a needs assessment to discover what teachers are interested in learning about.
2. Create a planning team of teacher leaders to help you design their PD experience. Focus on relationship building and cultural relevance.
3. Be intentional about creating sustainable PD by codesigning action steps and timelines for continuing the work.
4. When facilitating experiential PD, model strategies explicitly, check for understanding frequently, and have back-up plans when technology fails.
5. Celebrate new relationships and learning through showcases, shared publications, and award ceremonies.

The grassroots efforts of the community may not bring about radical change overnight, but as Wangari Maathai confidently asserted, "The little grassroots people...can change this world" (Dater & Merton, 2008).

NOTE

This work was supported by a Constance McCullough International Research Grant from the International Literacy Association.

REFERENCES

- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp0630a>
- Coiro, J., Coscarelli, C., Maykel, C., & Forzani, E. (2015). Investigating criteria that seventh graders use to evaluate the quality of online information. *Journal of Adolescent & Adult Literacy*, 59(3), 287–297. <https://doi.org/10.1002/jaal.448>
- Commeyras, M., & Inyega, H.N. (2007). An integrative review of teaching reading in Kenyan primary schools. *Reading Research Quarterly*, 42(2), 258–281. <https://doi.org/10.1598/RRQ.42.2.3>
- Darling-Hammond, L., Hyster, M.E., & Gardner, M. (2017). *Effective teacher professional development*. Palo Alto, CA: Learning Policy Institute.
- Dater, A., & Merton, L. (Directors). (2008). *Taking root: The vision of Wangari Maathai* [Documentary film]. USA: Marlboro Productions.
- Dwyer, B. (2016). Engaging all students in internet research and inquiry. *The Reading Teacher*, 69(4), 383–389. <https://doi.org/10.1002/trtr.1435>
- Garcia, A., & O'Donnell-Allen, C. (2015). *Pose, wobble, flow: A culturally proactive approach to literacy instruction*. New York, NY: Teachers College Press.
- Gudu, B.O. (2015). Teaching speaking skills in English language using classroom activities in secondary school level in Eldoret Municipality, Kenya. *Journal of Education and Practice*, 6(35), 55–63.

- Kimani, H.N., & Onyancha, O.B. (2015). Information literacy skills among incoming first-year undergraduate students at the Catholic University of Eastern Africa in Kenya. *Innovation*, 51, 23–45.
- Leu, D.J., Kinzer, C.K., Coiro, J., Castek, J., & Henry, L.A. (2019). New literacies: A dual-level theory of the changing nature of literacy, instruction, and assessment. In D.E. Alvermann, N.J. Unrau, M. Sailors, & R.B. Ruddell (Eds.), *Theoretical models and processes of literacy* (7th ed., pp. 319–346). New York, NY: Routledge.
- Lloyd, M. (2015). National and international frameworks for teacher competency. In M. Henderson & G. Romeo (Eds.), *Teaching and digital technologies: Big issues and critical questions* (pp. 295–306). Melbourne, NSW, Australia: Cambridge University Press.
- Lowe, G., & Prout, P. (2019). Reframing teacher in-service training in Kenya: Recommendations from the literature. *Africa Education Review*, 16(3), 54–66. <https://doi.org/10.1080/18146627.2017.1340803>
- Lucas, T., & Villegas, A.M. (2011). A framework for preparing linguistically responsive teachers. In T. Lucas (Ed.), *Teacher preparation for linguistically diverse classrooms* (pp. 55–72). New York, NY: Routledge.
- Maathai, W. (2007). *Unbowed: A memoir*. New York, NY: Anchor.
- Metto, E., & Makewa, L.N. (2014). Learner-centered teaching: Can it work in Kenyan public primary schools? *American Journal of Educational Research*, 2(11A), 23–29. <https://doi.org/10.12691/education-2-11A-4>
- Ministry of Education Science and Technology. (2014). *National Education Sector Plan: Vol. 1. Basic education programme rationale and approach 2013/2014 – 2017/2018*. Nairobi, Kenya: Author. <https://www.globalpartnership.org/content/education-sector-plan-2013-2018-kenya>
- Mirra, N., Morrell, E., & Filipiak, D. (2018). From digital consumption to digital invention: Toward a new critical theory and practice of multiliteracies. *Theory Into Practice*, 57(1), 12–19. <https://doi.org/10.1080/00405841.2017.1390336>
- Mutai, N.C. (2012). A critical review of oral questioning technique in secondary school English language teaching in Eldoret Municipality, Kenya. *Journal of Emerging Trends in Educational Research and Policy Studies*, 3(3), 323–330.
- Ngware, M. (2013). *Moving from evidence to policy and action: Can teacher quality help improve learning outcomes in Kenya?* [Briefing paper]. Nairobi, Kenya: African Population and Health Research Centre.
- Ngware, M.W., Oketch, M., & Mutisya, M. (2014). Does teaching style explain differences in learner achievement in low and high performing schools in Kenya? *International Journal of Educational Development*, 36, 3–12. <https://doi.org/10.1016/j.ijedudev.2014.01.004>
- Ogembo, J.G., Ngugi, B.K., & Pelowski, M. (2012). Computerizing primary schools in rural Kenya: Outstanding challenges and possible solutions. *The Electronic Journal on Information Systems in Developing Countries*, 52(1), 1–17. <https://doi.org/10.1002/j.1681-4835.2012.tb00371.x>
- Okpala, N., & Onocha, C.O. (1988). The relative effects of two instructional methods in students' perceived difficulty in learning physics concepts. *Kenya Journal of Education*, 4(1), 147–161.
- Owens, R.F., Hester, J.L., & Teale, W.H. (2002). Where do you want to go today? Inquiry-based learning and technology integration. *The Reading Teacher*, 55(7), 616–625.
- Piper, B., Oyanga, A., Mejia, J., & Pouzevara, S. (2017). Implementing large-scale instructional technology in Kenya: Changing instructional practice and developing accountability in a national education system. *International Journal of Education and Development Using Information and Communication Technology*, 13(3), 57–79.
- Spires, H.A., Himes, M.P., Paul, C.M., & Kerkhoff, S.N. (2019). Going global with project-based inquiry: Cosmopolitan literacies in practice. *Journal of Adolescent & Adult Literacy*, 63(1), 51–64. <https://doi.org/10.1002/jaal.947>
- Spires, H.A., Kerkhoff, S.N., & Graham, A.C.K. (2016). Disciplinary literacy and inquiry: Teaching for deeper learning. *Journal of Adolescent & Adult Literacy*, 60(2), 151–161. <https://doi.org/10.1002/jaal.577>
- Spires, H.A., Kerkhoff, S.N., & Paul, C.M. (2020). *Read, write, inquire: Disciplinary literacy in grades 6–12*. New York, NY: Teachers College Press.
- Spires, H.A., Kerkhoff, S.N., & Zheng, M. (2018). Creating a community of inquiry with teachers in China: New literacies, new complexities. In H.A. Spires (Ed.), *Digital transformation and innovation in Chinese education* (pp. 100–118). Hershey, PA: IGI-Global.
- Spires, H.A., Lee, J.K., Young, C., Leu, D., Coiro, J., & Castek, J. (2009). *New Literacies Teacher Leader Institute*. Raleigh: Friday Institute for Educational Innovation, North Carolina State University.
- Spires, H.A., Paul, C.M., Himes, M., & Yuan, C. (2018). Cross-cultural collaborative inquiry: A collective case study with students from China and the US. *International Journal of Educational Research*, 91, 28–40. <https://doi.org/10.1016/j.ijer.2018.07.002>
- Stake, R.E. (2000). Case studies. In N. Denzin & Y. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed., pp. 435–454). Thousand Oaks, CA: Sage.
- Wanzala, O., & Nyamai, F. (2018, July 23). Big hurdles thwart Jubilee's laptops plan. *Daily Nation*. Retrieved from <https://www.nation.co.ke/news/Big-hurdles-thwart-Jubilee-s-laptops-plan/1056-4676332-9w2jndz/index.html>

MORE TO EXPLORE

- Zahri, F. (2019, September 4). 'Digital divide' will worsen inequalities, without better global cooperation. *UN News*. <https://news.un.org/en/story/2019/09/1045572>
- View more about the NLIPI series in Kenya: <https://www.youtube.com/watch?v=XxcsDWSHqPM&t=>
- PBI Global student examples and teacher resources can be found on the PBI Global website: <https://www.fi.ncsu.edu/projects/project-based-inquiry-global/>.
- Listen to Kenyan activist Wangari Maathai's 2004 Nobel Lecture: <https://www.nobelprize.org/prizes/peace/2004/maathai/lecture/>.