

# Expanding Teacher Support through Mobile Mentoring in Kakuma Refugee Camp: Benefits and Challenges

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## **Introduction**

Governmental and non-governmental institutions alike have rallied around technology as a potential solution for addressing the dearth of quality educational opportunities and adequately trained teachers in many regions around the world (Burns, 2011; Carlson, 2013; Dahya, 2016). This is no less true in humanitarian and refugee contexts where technology is being used in myriad ways to connect teachers and learners with educational content and resources. A recent landscape review (Dahya, 2016) about the use of Information and Communication Technology (ICT) in these contexts stated that technology has the potential to support education for marginalized populations in crisis contexts, and that teacher training and student learning are the primary areas of focus for utilizing technology for education. In many settings, technology is used for the provision of lesson plans and curricula to deliver subject knowledge directly to students, to train or certify teachers, and to connect individuals and build community (Dryden-Peterson, Dahya, and Douhaibi, 2017; Power, 2012; Winthrop and Smith, 2012). Modes of delivery include computers, laptops, tablets, portable media players, e-readers, personal digital assistants, and mobile phones (Burns, 2011; Carlson, 2013; Winthrop and Smith, 2012; Dahya, 2016).

Mobile phones have been singled out as a particularly useful device for communication due to their ubiquity, with the number of people in Africa, for example, with access to mobile phones far outstripping those with access to computers (Burns, 2011; Carlson, 2013; Dryden-Peterson, Dahya, and Douhaibi, 2017; UNESCO, 2012). In addition to the high cell phone penetration in the region, mobile phones offer other advantages as well. They are relatively low-cost and easy to recharge in many contexts, making them more scalable (Carlson, 2013; Power, 2012).

One way in which mobile phones are being utilized is for teachers to use phones to connect with one another around educational practices (Dahya and Dryden-Peterson, 2016; Pouezevara and Khan, 2007; UNESCO, 2012). In some cases, teachers have spontaneously created Facebook and WhatsApp groups to discuss teaching challenges (Dryden-Peterson, Dahya, and Douhaibi, 2017); in other cases, digital connections have been planned into knowledge-sharing spaces as part of educational initiatives (Burns, 2011; Pouezevara and Khan, 2007). Through their phones, teachers have consulted each other, exchanged resources, discussed professional development, brainstormed solutions to challenges they may be facing, and shared experiences (Burns, 2011; Dryden-Peterson, Dahya, and Douhaibi, 2017; Dahya, 2016; Pouezevara and Khan, 2007). Connectivity can also be a conduit to social support for educators who have a peer network through which they can seek support for their roles and responsibilities in challenging circumstances (UNESCO, 2012).

While technology may be a powerful and useful tool, it is not a cure to all that ails education (UNESCO, 2012; Dahya and Dryden-Peterson, 2016) and it is best utilized when paired with human interaction (Carlson, 2013; Dahya, 2016). Models that coupled technology with some form of in-person component and prioritized appropriate technology training for beneficiaries saw better results than those that did not (Carlson, 2013; Dahya, 2016; Winthrop and Smith, 2012). How technology can be used effectively to achieve educational aims and to support teacher professional development may be different across contexts, making it imperative to listen to local stakeholders and seek their guidance in adapting technology and educational content appropriately (Carlson, 2013; Dryden-Peterson, Dahya, and Douhaibi, 2017; Dahya, 2016).

While early evidence suggests technology has the potential to help teachers and learners in resource-scarce contexts, there are limitations as well. Many of the educational initiatives discussed in the literature were in the pilot or early stages of implementation and had not been implemented long-enough to gather evidence on long-term impact and sustainability (UNESCO, 2012; Dahya, 2016). Developing the evidence base may also prove challenging because technology changes so rapidly that what worked well one year may be obsolete the next (Burns, 2011; Carlson, 2013).

In this article, we share findings from a mobile mentoring component of a teacher professional development initiative implemented in Kakuma refugee camp in Kenya and reflect on the benefits, challenges and lessons learned from the perspectives of the key stakeholders involved, namely the global mentors, mentees (refugee and Kenyan teachers), and project management team. The results portray the complicated reality of implementing an ICT intervention in a crisis context and tease out some advantages and disadvantages of leveraging mobile technology to support teachers from other project

activities. Further, the findings reinforce the call for further studies to better understand the ways in which technology can most effectively support learning (for both teachers and students) in these settings.

### ***Kakuma Refugee Camp***

Kakuma refugee camp is located in Northwest Kenya near the border with South Sudan. Originally established in 1992, the camp is home to 147,966 refugees representing 20 different countries; the largest populations hail from Somalia and South Sudan, but there are also refugees from Burundi, the Democratic Republic of Congo, Ethiopia, Sudan, and Uganda (UNHCR 2018). More than half of the total population is below the age of 18. At the primary level, 35.7 percent of children are out-of-school (UNHCR 2017). At the secondary level, the out-of-school rate in Kakuma is more severe, with 95 percent of youth out of school (UNHCR 2017).

Refugee teachers constitute the majority of the teaching population in Kakuma, representing 85 percent of the teacher cadre (UNHCR 2017a). Despite the large presence of refugee teachers, there are limited training opportunities in the camp. Even fewer teachers benefit from on-the-job supervision, mentoring, and certified preservice and in-service professional training. Compounding the lack of training are the overwhelming challenges teachers face, including overcrowding, overage learners, multiple languages, limited teaching and learning materials, lack of furniture, and learners' academic and psychosocial needs, to name just a few (Mendenhall, 2017). Higher quality and continuous teacher professional development programs are needed in these contexts.

### ***Teachers for Teachers: Expanding Teacher Support through Mobile Technology***

In response to the significant gaps in providing robust support to teachers working in displacement contexts, a small team of faculty and graduate students from Teachers College, Columbia University developed *Teachers for Teachers* to provide competency-based, continuous teacher professional development for educators working in refugee and other crisis settings. The *Teachers for Teachers* model is comprised of three components: in-person training workshops, peer coaching, and mobile mentoring using WhatsApp. The training component utilizes the *Training Pack for Primary School Teachers in Crisis Contexts* and takes place in the form of workshops that cover four modules: Teacher's Role and Well-being; Child Protection, Well-being and Inclusion; Pedagogy; and Curriculum and Planning. Trainings are interactive, practical, and draw on local expertise in the Kakuma context. Peer coaching takes place after participation in the training workshops and consists of small groups of teachers who are connected with a peer coach—another teacher from their training cohort—who facilitates continuous opportunities for learning through Teacher Learning Circles. Peer coaching takes place for several months after the training workshops and establishes a network of peer support to encourage the transfer of newly gained knowledge from the training to teaching practice in the classroom. All

teachers who have participated in the trainings and ongoing peer coaching are additionally supported through mobile mentoring. With support from Safaricom and the Safaricom Foundation in 2016-17, 130 teachers in Kakuma were provided with phones, data and airtime and were connected to a global mentor, who was trained on the *Teachers for Teachers* model [1]. The global mentor, an experienced teacher or seasoned educator, provided regular support over WhatsApp for six months to a group of 4-5 teachers. Mentorship entailed sharing experiences, problem-solving, and offering teaching tips directly connected to the training, which were reinforced by a mobile mentoring curriculum that was developed to complement the training pack. In addition to the small-group WhatsApp chats, teachers also participated in a WhatsApp group with *all of the members* from their training cohort, which served as a platform for teachers to exchange information and ideas with a larger group of approximately 30 teachers. The global mentors had the same opportunity to post questions to other global mentors (and project team members) as they brainstormed possible strategies and solutions for their mentees. While all components of the *Teachers for Teachers* model are necessary for providing continuous support to teachers in crisis contexts, this paper aims to highlight the challenges and benefits of using mobile technology in teacher professional development in crisis contexts.

## Methods

This article draws on data collected during the first year of implementation of the *Teachers for Teachers* initiative in 2016-2017 and early 2018. We monitored and exported the WhatsApp chats for the 130 teachers who participated in the first mentoring groups, along with 33 global mentors, and coded and analyzed the chat exchanges based on key themes related to the teacher professional development model. In April 2017, we conducted two focus groups with 19 teachers to learn about their experiences specifically with Mobile Mentoring. Upon completion of the first year, a select number of teachers (n=33) participated in a monitoring and evaluation tool called Most Significant Change (MSC) (Davies and Dart, 2005). In this reflective storytelling activity, teachers were interviewed about changes they saw in themselves or their teaching and were asked to identify the most important of these changes. The purpose of the MSC interviews was to capture teachers' stories of significant change that may have resulted from participating in *Teachers for Teachers*. In early 2018, we conducted additional semi-structured interviews with teachers (n=15) and mentors (n=11) that built on what we learned from earlier data. Through these interviews, we further explored teachers' and mentors' mobile mentoring experiences and examined common responses across participants. The project management team, which includes the authors, also regularly discussed mobile mentoring in an effort to document the benefits and challenges of implementing these activities from our perspective. For this article, we draw on the aforementioned data sources to identify the key benefits and challenges that mentors, mentees, and the

program management team experienced in an effort to provide a critical reflection on the role of mobile technologies in this particular project.

### **Perceived Benefits of Mobile Mentoring**

*Connecting people and resources inside and outside of the refugee camp*

Teachers reported that mobile mentoring was beneficial for feeling connected to fellow teachers both inside and outside of Kakuma refugee camp, creating an extended network of support. Global mentors were outside of the camp and could offer support as experienced teachers or education professionals in their home countries. For this reason, some teachers reported that their global mentor was someone they could go to with their problems when they were unable to get help from other teachers in their school. Badr (age 24, South Sudan) stated: *"Sometime we [are] stuck on where to answer the question, [my mentor] gives a hint on what to do. And that one has helped us to come up with ideas because sometimes some of the questions looked to be very hard and you are confused. But if someone tells you a small idea on how to tackle that, it becomes easy. Your mind open[s] and you are able to answer it."* Beyond connecting with a mentor outside of the camp, teachers (mentees) also reported numerous benefits derived from being connected to other teachers within the camp in their mentoring groups. This peer-to-peer connection allowed mentees to share new strategies on classroom management and teaching practices (among other topics), while also building a sense of camaraderie through shared experiences. Rashid (South Sudan), stated: *"[Mobile mentoring] also help[s] us, even the teachers within [the camp]; we were able to communicate with one another in case we have challenges, we use mentorship, we mentor to one another."* Perhaps even more significantly, teachers reported feeling a sense of pride when they were able to "mentor" their peers and help a colleague overcome a challenge.

Using mobile mentoring as a tool for professional development was also beneficial because mobile phones with airtime and data allowed teachers to ask about, research and problem-solve their own challenges in the classroom. Challenges encountered during the school day could be posted to WhatsApp, and if their group was active, teachers were able to get an immediate response. Teachers reflected on this process, saying that it allowed them to collect multiple ideas from different participants, providing them with a variety of solutions that could be evaluated through trial and error. One teacher explained, *"[I]n mentoring, I was given about six [solutions] from [my global mentor]. She gave me about six ways [to solve the problem]. Those six ways that you can apply them – if the other one is not working...you can apply the other one until you [solve the problem]"* (Jahi, South Sudan). Another teacher, Aminifu (Kenya) echoed this sentiment and highlighted the increased efficiency of getting new ideas from various colleagues – global mentors and fellow mentees: *"[b]eing a teacher, when you are alone, you need to go and struggle reading for more information...but in mentoring, different people answer different questions, and you get a lot of information...you just post a question, you are answered. You take some points, you put it into practice, and all of it saves time."*

In addition to the smaller mentoring groups, teachers expressed the benefits of engaging in the larger WhatsApp chat that included all of the teachers (approximately 30) from their training cohort. The preference for this larger chat was that at any given time at least a handful of teachers would be online and they could discuss topics or challenges related to their teaching in real time. One teacher, Faheem (South Sudan), commented that *“when we were in the big group we were able to get [a] solution from any question that a person asks in a very short time.”* Faheem goes on to highlight the challenge of delayed responses in the smaller chats (a point further explored below): *“when you are less [in the smaller mentoring chats] it is not easy because maybe some will not turn up on that day or others might be busy. You may not get the answer on the spot.”* There may be other reasons that explain this, which would also lead to different experiences in the mentoring groups, including how many participants are in the same time zone, but also how quick-to-respond mentors are regardless of where they are in the world.

Communicating with messages and media over WhatsApp also benefited global mentors, some of whom reported feeling more engaged with the mentoring experience when it was happening in real time. They found that this sense of “immediacy” helped strengthen the connection they felt with their mentees, and also helped them understand a context that, for many of them, was very different from their everyday experience. As Kelly (USA) explains: *“That group, because it’s constant when it’s active, because they could be texting anytime and often are...[you] feel side by side with them and wonder about [how] a certain situation is going. So [I have] this constant awareness of his life and his teaching.”*

The global mentors’ understanding of Kakuma’s unique context was further strengthened through the use of media. In the WhatsApp mentoring group chats, global mentors and mentees were able to share photos, audio and videos as a way to enhance their discussions. Nearly half of the global mentors reported that the use of media was beneficial in order to better understand the challenges posed to them by their mentees. This was especially true when teachers asked for strategies to help manage overcrowded classrooms (with upwards of 200 students in some instances), with one global mentor (Kelly, USA) noting that once she saw a video of a classroom in Kakuma, she was better able to understand the extent of the challenge.

#### *Sharing, testing and improving teaching strategies*

Beyond fostering understanding of the Kakuma context for global mentors, sharing media in WhatsApp also benefited teachers. Global mentors and mentees shared innovative practices through photos or videos, such as a new way to organize a classroom or an outdoor science activity. In total, three teachers reported that such exchanges were helpful because they were provided with something they could more easily replicate, and sometimes they felt more motivated to try a new idea upon seeing it visually. For example,

sending photos of classroom seating arrangements allowed teachers to share best practices with their colleagues without the time and cost of traveling to schools across the camp. Teachers also shared media related to pressing issues in their schools. For example, multiple teachers reported their perspective on corporal punishment changed when a fellow teacher shared a video of a teacher using corporal punishment (not filmed in Kakuma) in their training cohort's WhatsApp chat. One teacher, Lam (South Sudan), explained how watching this video of a teacher caning a student helped him better empathize with his own students:

*"...when I saw that [video], it made me curious actually the first day I saw it because to be like that as a teacher, you scare the learners completely. You are killing...their morale of being in school....So I saw that video, and completely I learned how... I was imagining if I was a learner, I could not relate with that teacher anymore."*

In addition to sharing media resources, mentors and mentees discussed a range of topics connected to the teaching competencies presented during the training. Analysis of WhatsApp conversations revealed that one of the most significant outcomes was not only teachers' implementation of shared strategies, but the success of these strategies. In fact, nearly half of the teachers stated that they tested potential solutions shared within their WhatsApp conversations and found them to be effective in the classroom. The two categories of discussion that garnered the greatest number of text exchanges across the groups were pedagogy and child protection, well-being and inclusion (Table 1). The top three topics of discussion across all categories were teacher-student relationships, overcrowded classrooms, and teaching strategies (Table 2).

Table 1: Frequency of Themes Discussed Across WhatsApp Chats

Themes	Frequency	Percent
Pedagogy	581	37.27%
Child protection, well-being and inclusion	418	26.81%
Teacher's role & well-being	273	17.51%
Curriculum & planning	181	11.61%
Other	106	6.80%
Total	1,559	100.00%

Source: Teachers for Teachers internal data

Table 2: Most Frequent Sub-Themes Across WhatsApp Chats

Sub-Themes	Frequency
Teacher-student relationship	101
Overcrowded classrooms	95
Teaching strategies	92
Assessment	76
Classroom management	67
Student attendance	61

Source: Teachers for Teachers internal data

With access to a smartphone and data, teachers reported using technology beyond the WhatsApp chats and media exchanges in ways to improve their own teaching practices. Of the 15 teachers interviewed in January 2018, 10 reported using phones to conduct online research on topics such as classroom management or supporting learners with special needs. Teachers also reported using their phones as teaching aids in the classroom, to play audio examples of different animal noises or to show learners a diagram during science class. One head teacher said his phone became the school phone, and teachers at his school used it to contact parents during the day. Teachers also used phones to contact other teachers when they needed help covering a class in the event of an illness or to contact their learners' parents to follow up on individual cases.

#### *Building confidence and motivation through mobile mentoring*

Both teachers and mentors reported beneficial outcomes from their participation in mobile mentoring including improved confidence and motivation in their work. Of the 15 teachers interviewed in January 2018, six reported that, because mobile mentoring had provided them with an opportunity to discuss teaching with their peers, they were motivated to do their best to support their learners' needs and continue pursuing the profession. One teacher recounted how he gradually overcame his fear of talking to parents with the support of his mentor.

Similarly, mentors reported that they felt motivated to continue incorporating service to others into their personal and professional lives. Many mentors felt the experience provided them with a heightened understanding of refugee contexts. Some mentors reported experiencing "reverse mentoring" from the teachers they were working with. One mentor, Mark (USA), described how, through his mentees, he learned new ways of approaching classroom management, and that he was deeply inspired by his mentees' passion and perseverance.

#### *Immediate feedback loops for project management team*

From the project management perspective, it was beneficial to collect data through WhatsApp. Project managers posed as silent observers in each mentoring group on WhatsApp to

periodically assess how the groups were progressing and to be on hand in the event a serious issue was raised (e.g. concern about a child's well-being). In this role, managers were able to export chat data from WhatsApp on a regular basis for analysis. These continuous feedback loops about the challenges that teachers were facing in schools also cycled into the ongoing project design for future teacher training workshops and peer coaching workshops.

### **Perceived Challenges**

#### *Engaging participants and sustaining mentoring exchanges*

While mobile mentoring provides many benefits to teacher professional development, several challenges also emerged throughout program. The two most commonly reported challenges cited by teachers and mentors were lags in responsiveness and uneven engagement of participants in mentoring groups. Another pressing challenge has been unstable connectivity and access to electricity in the camp, which affected teachers' ability to consistently participate in their WhatsApp chats as their phones would lose power.

Lags, or sometimes a complete lack, of responses de-motivated global mentors and teachers from participating in mobile mentoring. Teachers stated that delayed responses from mentors and fellow mentees was a disadvantage because it could take hours or days before a question was addressed. Many teachers and mentors recognized the delay in response time could be attributed to time differences between Kenya and where the global mentor was based; however, this delay or lack of responsiveness was still de-motivating, causing one teacher to stop sending messages altogether because of a total lack of response from their mentor. Further, due to the lag in response time, it was sometimes difficult to create a strong dialogue between all parties.

In an effort to address this challenge of lags in response time, some mentoring groups coordinated a time where all members could be on WhatsApp simultaneously. Of the teachers we interviewed, two expressed their preference for having these "live chats." Even with scheduled meetings, however, the time difference and varying work schedules for mentors and teachers, often meant that these "live chats" took place at inconvenient times for mentors and/or teachers, leading to less effective conversations. In some cases, not all teachers arrived online for the scheduled WhatsApp meeting, and time management of the meetings posed a problem as well. One mentor, Michael (Kenya), said, *"Scheduled meetings rarely began on time or ended as scheduled. Sometimes I had to remind the mentees through SMS or even voice calls. Sometimes work-related commitments hindered our discussions, which either began late or were postponed altogether."*

Lack of responsiveness and low levels of participation affected both mentors and mentees. For the mentees, five teachers mentioned that a delay in response from their fellow teachers prevented their challenges from being solved. Abiola (South Sudan) commented, *"when you ask the question, you find that... not all teachers comment. You pose a question and one*

*day later they respond. You find that there is a problem that you want to solve within two days, but if it takes a long time for you to get a faster way to do it, it might be stressing you.*" Teachers commented that not only did they have to wait a long time for a response, but they also received feedback from fewer people than they hoped.

For the mentors, the biggest challenge they perceived was the difficulty in engaging all teachers to actively participate in discussions. Despite trying different strategies to engage teachers—including sending private WhatsApp messages, sharing photos or doing video introductions—several mentors expressed they had failed getting full and consistent participation from all of their mentees: two mentors commented that mentoring was "sporadic" or "never really took off". Another mentor, Erica (USA), described how, despite seeing photos and videos to understand her mentees' context, she failed to generate a conversation about what was going on in photos of a classroom, and ultimately was unable to gain meaningful insight into teachers' daily experiences and challenges.

While the *Teachers for Teachers* team supported mentors through orientations on the program and Kakuma context as well as sending tips on how to engage teachers using Whatsapp, this support was not always effective and the engagement tips were sometimes futile. Through the interviews with mentors, it became clear that mentors had different ideas for how to make mentoring more effective. One mentor felt that their group might have been better had it been split into smaller groups to change the dynamic and personalities between participants. Another mentor felt unsure of how to engage with her mentees personally, such as how to 'get to know each other' without being too invasive. Global mentor, Michael (Kenya) commented that, "*regarding the teachers, two... readily shared their experiences...one had to be prodded with specific questions in order to respond. Unfortunately, one of the mentees did not participate in any of the chats, both scheduled and impromptu.*" These insights highlight the highly personal nature of mentoring and the many variations it can take to be most effective. Further studies are needed to examine other potential explanations, such as issues related to identity (ethnic, gender) and positionality among mentors and mentees and the ways in which these elements might help or hinder online engagement.

Finally, project team members who served as silent observers in the mentoring groups, observed that not all mentors had the same level of experience or ability to facilitate mentoring groups. Given that being a global mentor was a voluntary position, and despite the support and various orientation sessions provided to mentors, the quality of mentoring relationships inevitably depended on the expertise, amount of time and level of investment mentors were able to give the project.

*Barriers to reliable and constant communication*

Connectivity presented another challenge to mobile mentoring. Teachers noted that the network was often unreliable, making it difficult to consistently connect and communicate with their mentor. When they were able to access WhatsApp, the 3G network functioned slowly, and the 4G network consumed too much data. One global mentor, Erica (USA) shared that the network speed sometimes prevented her videos from sending, and another mentor, Michael (Kenya), said that he himself was often in a region with an unreliable network. When the network was available, one teacher mentioned in a focus group discussion that some teachers were unable to participate because their phones had died. Since most people in Kakuma do not have electricity in their homes, fee-based charging stations are set up throughout the camp. Presently, teachers must travel to these stations and pay to charge their phone batteries, despite ongoing efforts to improve connectivity around the camp.

Teachers also faced challenges of stolen, lost, or broken phones which disrupted the flow of mentoring while they tried to get back online, either by using a replacement phone and SIM from the program, or by using their personal phone or data to stay connected to mentoring. In these cases, however, some teachers were unable to retrieve the contact information of their WhatsApp group on their personal device and were not able to reconnect. Mentors also cited mentees' loss of access to their phone, or issues with their SIM cards, as common logistical challenges that hampered group exchanges.

*Logistical challenges experienced by the Project Management Team*

Project implementation for mobile mentoring required significant time, capacity and human resources to execute from the perspective of the project management team. Implementation logistics included procurement of the hardware, technological capacity-building among teachers and mentors, communication between implementing partners and maintenance of WhatsApp group connectivity. Procuring phones, SIM cards and data required coordination between multiple key actors, each governed by their own rules and regulations. Communication of and adherence to regulatory standards delayed the hardware's arrival into Kakuma, leading to delays in initiating mentoring activities and creating longer-than-intended gaps between training, coaching and mentoring. Once the phones and SIM cards arrived in Kakuma, they were distributed to teachers, and each month of the mentoring program, Safaricom & Safaricom Foundation uploaded data to each line. The project management team helped to build capacity among teachers and mentors by holding in-person orientations for teachers, and orientations for mentors over WebEx. The teacher orientation sessions were labor intensive as most teachers needed help downloading WhatsApp with limited access to Wi-Fi, though managers were able to leverage peer support among tech savvy teachers who devised an off-line strategy of sharing WhatsApp applications over Bluetooth.

In a stable context, the procurement of hardware and capacity building at the start of a project may be the most challenging logistical steps; in a crisis context, however, maintaining connectivity between teachers and mentors throughout the duration of the program was arguably more time consuming. Each time a teacher's phone was stolen, lost, or broken the project management team followed a cascade of steps to get the teacher back online and re-connected to the WhatsApp group. These included communicating to the mentor, teacher, Safaricom, and our local partner, requesting that the lost line be canceled and a new line be activated, and coordinating with the teacher and local partner to report any cases of theft to the police and facilitate the delivery of the new phone and SIM card. The multiple steps and actors involved to address each lost phone, in addition to unreliable connectivity within the camp, meant that it took one to two weeks to get a teacher back online. These technical and logistical issues would have a significant impact on global mentors' abilities to engage and sustain participation in mentoring activities, though there may be other reasons related to the perceived quality and added value of the mentoring exchanges to the teachers' daily lives that we have yet to ascertain.

### **Conclusion**

This study reveals that while mobile technology can positively impact a teacher's professional development in meaningful ways, it does not function in isolation. Factors such as infrastructure and the quality of the partnerships are out of the initiative's control and contribute to a number of challenges not directly related to a program's design, yet nevertheless affect its impact and sustainability. This research also shows that the use of mobile technology for teacher professional development in crisis contexts offers intertwined benefits and challenges. For example, while the use of mobile phones was shown to be beneficial because of the immediacy in global mentor and teacher responses, this has also proven to be inconsistent depending on group dynamics or challenges with infrastructure such as a weak network or inconsistent electricity. Other examples include the ability to bridge physical and cultural gaps by sharing photos and videos on WhatsApp, while at the same time media was sometimes used unproductively or not at all. The use of mobile technology in our study further reveals unintended benefits *and* consequences. Teachers' use of phones for contacting parents and functioning as teaching aids was not part of the program design but resulted in improved teaching quality and a stronger sense of school community. Conversely, the reliance on one partner to provide phones, data and software and to play a key role when phones were lost caused significant delays and interrupted teachers' participation in mentoring. For many initiatives such as our own, using technology for humanitarian interventions requires a strategic partner whose focus and expertise is in technology and not necessarily humanitarian interventions, though a combination of both would be ideal. Furthermore, the dependence on one body can prove to be inefficient programmatically and an ultimately unsustainable solution. This may be true, for example, if the program's continuation is contingent on renewed funding or board approval, as is often the case when working with a private

sector partner. This in particular also reveals that while the literature elevates mobile technology for its ubiquity, many of the challenges project managers experienced were logistical and had to do with the technology itself.

While this study has attempted to tease out the challenges and benefits of using mobile technology, our program model is inherently intertwined with in-person training and peer coaching, and thus we are unable to examine the impact of technology on teacher professional development in isolation. In that respect, we first of all echo the importance of using technology in a deliberate combination with in-person interactions, and secondly, we emphasize the need for more extensive evaluations of the use of technology in crisis contexts so that we can continue to better understand the implications and impact for teacher professional development.

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## **Notes**

[1] During an initial prototype of the mobile mentoring activities that used teachers' own phones (i.e. basic, feature and smart), we found that teachers with smartphones and WhatsApp access were better able to engage in group mentoring and the horizontal exchange of information with peer teachers in the camp, not only relying on their

relationship with the global mentor. With this information we secured generous donations from Safaricom and the Safaricom Foundation.

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