Teacher-led Professional Learning in Tanzania: Perspectives of Mathematics Teacher Leaders

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Abstract

This paper explores the perspectives of mathematics teacher leaders (MTLs) on teacher-led professional learning (TLPL). Shaped by notions of symbolic interactionism, the study employed a multisite case study design. Empirical data were collected through in-depth interviews. The study revealed the practice of TLPL influential in facilitating teacher participation and engagement in learning; encouraging long-term teacher collaboration and interaction; inviting integration of teaching experiences; inviting contextualization of professional learning; and more importantly, in promoting sustainability of professional learning of mathematics teachers. A significant implication of this study is that the education system of Tanzania needs to encourage and empower mathematics teachers to become teacher leaders for them to be able to lead and support the professional learning of mathematics teachers within their schools.

Keywords

Teacher-led professional learning, mathematics teacher leaders, rural communities, mathematics teachers, Tanzania

Introduction

This study aimed at exploring the perspectives of mathematics teacher leaders (MTLs) on teacher-led professional learning (TLPL) following their engagement in facilitating the professional learning of their teacher colleagues. Both the MTLs and their teacher colleagues worked in rural primary schools in Tanzania. The MTLs were primary school mathematics teachers who were identified by their districts as master teachers and who participated in a series of professional learning sessions that were a part of an internationally funded project. A goal of the project was to enable mathematics teachers to become MTLs, therefore professional learning sessions were led by mathematics teachers themselves rather than facilitated by educational officers from districts or the ministry of education or by representatives of non-governmental organizations (NGOs).

This project goal was consistent with the findings of researchers in Tanzania (Mhando,

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2012; Komba & Nkumbi, 2008) and around the world (Hardman et al., 2015). Officer-led teacher learning sessions were sporadic, and, consequently, ineffective, leaving many teachers not in a position to continually promote their professional learning. Even more, the professional learning sessions in Tanzania were conducted at the convenience of the officers who facilitated the sessions (Hardman et al., 2015). An emphasis of the internationally funded project was to develop capacity to promote the professional growth of rural primary school mathematics teachers.

As participants in the project, the MTLs had the opportunity to develop and deliver three different professional learning sessions for teachers in their districts. This paper reports on our study with eight of those MTLs. Our research was framed by the question: What are the perspectives of Tanzanian mathematics teacher leaders on teacher-led professional learning?

Teacher Professional Learning Internationally and in Tanzania

New demands have been continuously placed on the work of teachers in schools. One of the demands placed on teachers is for them to become "leaders, educators [of both students and teachers] who can make a difference in schools and schooling now and in the future" (Lieberman & Miller, 2004, p. 11). Similarly, Easton (2008) called for teachers to become educators, suggesting that they "must be knowledgeable and wise … must change in order to get different results … must become learners and they must be self-developing" (p. 756) throughout their teaching career. Aubusson, Ewing, and Hoban (2009) sent a compelling reminder to teachers, calling them "to be in control of their own professional learning if a change in schools is to be sustained beyond the length of a particular process" (p. 112).

Increasingly, the research scholarship in mathematics teacher education has equally encouraged mathematics teachers to take charge of their own professional learning and to work together to enrich pedagogical practices (Davis & Simmt, 2006; Neubrand et al., 2009; Davis & Renert, 2014; Balka, Hull, & Miles, 2010). The National Council of Teachers of Mathematics (2000) through its *Principles and Standards for School Mathematics* stressed "[t]here is an urgent and growing need for mathematics teacher-leaders … who can assist with the improvement of mathematics education" (p. 375) in schools.

Komba and Nkumbi (2008) revealed two practices that characterize teacher learning in Tanzania. First, the professional learning programs were geared to familiarize teachers with what was new in their work of implementing the centralized curriculum: new materials such as the curriculum, textbooks; emerging policies; and new methods and approaches to teaching. The second was the invitation of primary school teachers to use professional learning programs as avenues for upgrading their teaching qualification.

Hardman et al. (2015) identified a dominant practice that characterized the professional learning of teachers in Tanzania in the early 2010s. The practice was that teachers from around the country convened in zone-specific teacher colleges for their professional learning. The sessions were facilitated by education officers and teacher educators from teacher colleges. Hardman et al. found that the facilitators of the workshops and seminars lacked a broader understanding of the realities of teaching in classrooms as some of them had little or no experience of teaching. This situation has the potential to mean that teacher learning was less effective in supporting teachers to enrich their pedagogical practices as it was not

well-connected to what was happening in classrooms.

Given these observations, it is entirely fair to argue that, borrowing Miles' (1995) words, teacher professional learning in Tanzania was "everything that a learning environment shouldn't be: ... brief, not sustained, designed for 'one size fits all,' ... imposed rather than owned, lacking any intellectual coherence, treated as a special add-on event rather than as part of a natural process, and trapped in the constraints of the bureaucratic system" (p. vii).

Hardman et al. recommended "the need to move away from ad hoc continuing professional development provision ... towards a more long-term sustainable vision of professional development" (2015, p. 604) in Tanzania. At the same time, an internationally funded project titled *Capacity Development for Mathematics Teachers in Rural and Remote Communities in Tanzania*, (Simmt et al., 2011) was being implemented. The project was designed to respond to the feedback from primary school mathematics teachers who reported that they needed to be highly involved in the process of promoting their professional growth and it was designed to respond to the need for a more long-term sustainable vision of professional development (Simmt et al., 2011; Binde et al., 2013). This paper describes the perspectives of primary school mathematics teachers who were a part of this project and who led teacher professional learning in their districts.

Methods & Conceptual Framing

We used a multisite case study design (Merriam, 2014) framed by symbolic interactionism (Blumer, 1969) that suggests that human beings develop meanings out of their interaction with the situation or event through interpretative processes and through social interactions.

This study included eight MTLs (Mazengo and Senzini had taught for more than 30 years; Pili, Gabby, and Kenny had taught for more than 20 years; Anne 9 years; Thea 6 years; and Isile 8 years respectively) from different rural primary schools across different school districts in four regions of Tanzania. Rural schools were located in isolated areas that were far from the district headquarters or towns, and they had a high rate of poverty attributable to low income (United Republic of Tanzania, 2010). Each MTL was a case as they each experienced TLPL in different locations alongside different mathematics teachers.

We used an in-depth one-hour semi-structured interview in order to gain the perspectives of the teacher leaders. We carefully engaged in reading and re-reading the transcripts to get a holistic sense of the experiences lived by the MTLs for our data analysis. We then employed manual coding protocol (Miles & Huberman, 1994), to generate a list of themes as informed by the research question and related literature through our cross-case analysis. We drew conclusions based on the meanings that emerged from the displayed data and paid close attention to the meanings that each teacher leader attached to TLPL since those meanings were important to the MTLs (Blumer, 1969).

Results

The work of facilitating the professional learning of mathematics teachers in rural communities in Tanzania was an opportunity for the MTLs to experience teacher learning from another perspective. Five denotative perspectives were revealed out of the thematic analysis of the interview transcripts. The perspectives included TLPL as: participative and engaging; reflective and experiential; collaborative; practical and contextual; and ongoing and sustainable. Descriptions of each perspective are provided in the succeeding sections.

TLPL as a Participative and Engaging Practice

The MTLs conceived TLPL as a practice that empowers mathematics teachers to become active learners, deeply engaged in the process of their professional learning to improve practice. Nearly all the MTLs pondered the practice to allow mathematics teachers spaces to wonder and freely express their thoughts, becoming encouraged to participate in learning alongside their colleagues. Senzini, for example, explained:

> The feeling that teachers get when they attend professional learning [session] which is led by a teacher is that of … our learning is under our colleague, our friend who is … part of us. So, I think that this feeling makes them not to feel shy to speak their minds. They can talk all that they want as they … aren't afraid [of] the leader because he or she is their fellow teacher. I think that this type of professional learning is dominant as it removes the curtain that has separated them from leading teacher professional learning for a long time.

The sentiment was echoed by Mazengo, who pointed out that the "one thing special about this practice [TLPL] is the fact that teachers cannot stay quiet, sitting down waiting … [rather], they will do what they think is important and say what they want to say as no one is there to make them accountable for what they say or do during and after the sessions." Even though his thoughts, for the greater length, reverberate with that of Senzini, Mazengo's description is more enlightening. It highlights a situation which mathematics teachers are likely to find themselves in when their fellow teacher leads their professional learning. For Mazengo, the case would likely be different if an education officer, who could be in a position to make decisions about teacher's lives, was the leader. As Mazengo described, in a TLPL arrangement, teachers do not feel required to necessarily make choices about what to say, what to do, how to do what they are required to do, and at what time they should say and do. From his observations, such aspects are not favored in such a practice, as a teacher leader is not entitled to hold mathematics teachers responsible for the kind of participation they demonstrate during their professional learning.

For example, Mazengo described what might happen if an education officer would be the facilitator of a professional learning session. The educational officer might say to a teacher, "Why have you asked this simple question when you were trained to teach this, and you have been a teacher for many years? You are not an effective teacher at all!" In Mazengo's experience, questions like this, by the education officer hinder active participation of mathematics teachers in the professional learning sessions. With TLPL practice in place, Mazengo felt that mathematics teachers realized a friendly environment for them to genuinely engage in learning because the practice was not led by a formal, authoritative leader, but by a teacher colleague.

Other MTLs expressed similar sentiments, claiming the TLPL practice to be influential in allowing mathematics teachers to actively engage in their professional learning unlike different kinds of teacher learning. The MTLs were categorical that teachers felt comfortable participating in professional learning when their fellow teacher lead such learning. Anne's comments are illustrative:

> Think about having more than 60 free souls entirely unworried to do what they think could help their students to learn mathematics. Well, my teachers were delighted to have me there as they know that I'm a teacher like them, nothing to worry about. So, they engaged very well, others stepping into discussions, others engaging in

> lengthy conversations about what they were learning. I find this practice to give teachers what they want as professionals.

A common thread through the MTLs' experiences is that mathematics teachers developed a sense of confidence and comfort in participating in the professional learning activities when lead by a teacher colleague rather than an education officer. Teacher leaders are people who do not affect the employment of primary teachers. Education officers as professional learning leaders have the potential to affect the employment of primary teachers.

This perspective echoed Murray's (2014) views that teachers become profoundly dedicated and more engaged in their professional learning when they realize that they are learning in an environment where they are emotionally, physically, and professionally safe. As Senzini's metaphor of a curtain suggests, TLPL is free from making teachers feel restricted to actively participate in their professional learning. That is, the practice allowed mathematics teachers the freedom to wonder, notice, and freely express what they know, believe, and do while engaging in their learning. Such a situation reflects Drago-Severson, Blum-DeStefano and Asghar's (2013) influential assertion that "[c]reating supportive, relational contexts in which adults can talk regularly about their practice—as well as their values, beliefs, challenges, and guiding philosophies—facilitates self-analysis and can enhance the individuals' and the school's practice" (p. 39).

TLPL as a Reflective and Experiential Practice

The MTLs perceived TLPL to allow mathematics teachers spaces to engage in the process of reflection on their practice and, in turn, incorporate their classroom experiences into their professional learning. By having a leader of teacher learning who is more aware of what teachers and students do in practice, as they shared, the learning ultimately dwells, at length, upon careful consideration of what teachers and students experience in mathematics classrooms. Kenny, for example, explained further about how the practice is useful in encouraging teachers to reflect and integrate classroom experiences into their learning.

> Having a teacher leading the learning of other teachers makes a big difference. The first thing with that is about what he/she will want teachers to focus on. I think the focus will be on what we do in classes, which is all about teaching and facilitating student learning. So, that's the essential part of this type of learning of teachers. For us, I remember, we were concentrating on what we have been doing in our classrooms. It's entirely about our experiences of our classes and how we can improve that.

Kenny's comment reflects the idea that TLPL enables mathematics teachers to revisit pedagogical practices they employed in their classrooms to help students learn mathematics. It also reveals his confidence that the practice can help mathematics teachers to genuinely pay attention to their classroom experiences, realizing ways to improve what they do together with the students. For Kenny, the focus of teacher learning was on the learning of students and not on other aspects that have little or no connection to what is happening in mathematics classrooms.

As well, there was confidence that by participating in TLPL, mathematics teachers realized opportunities to share their experiences of teaching mathematics, as Gabby explained:

> The one thing I like about this [TLPL] is how it makes teachers feel during their learning. There is always flexibility that they cannot find in other initiatives. In our sessions, I do remember them going back to our

> classrooms … thinking and rethinking about what worked and didn't work in those places. That was important because they needed to think about what they can change … for the benefit of their students.

Here, Gabby reported engaging in back and forth movements alongside his colleagues in trying to make sense of what they could do to make a difference in their classrooms. For him, by having a teacher-colleague as a leader, teachers develop the confidence to engage in extended discussions meant to find ways for improving practice. Such an observation was echoed by Anne, who pointed out that "teachers need … opportunities to reflect on their experiences of teaching." She was confident that by having a teacher "leading the professional learning, that's very possible … the experiences become the focus for teachers to move forward [a]nd … the core of teacher professional learning."

Other MTLs drew on their experiences to demonstrate how the integration of classroom experiences shaped the nature of discussions during their learning sessions. They made it clear that teacher leadership prompted other teachers to candidly share thoughts, opinions, and experiences of teaching the subject in their classrooms. Senzini's comment about how incorporation of pedagogical experience into teacher learning is a natural tenet of TLPL:

> Our sessions were experience-based as most of the teachers talked about the things they do in their classrooms as they were working on tasks that we gave them to complete.

The MTLs acknowledged the practice to open spaces for colleagues to engage in reflecting on and integrating their teaching experiences into their professional learning. Kenny's comment of "teacher leaders make a big difference" when it comes to inviting teachers to engage in reflective learning is illustrative of this perspective. Such a perspective speaks to the notion that teacher leadership creates spaces for mathematics teachers to build on what is happening in their classrooms as they work to promote their professional growth. The MTLs are explicit that the practice is powerful in providing mathematics teachers with opportunities to revisit practices they employ in their classrooms but also to make sense of those experiences in moving forward with deepening their pedagogical knowledge. Hadar and Brody (2016) support this view, maintaining that teachers "[a]s professionals who deal with the domain of pedagogy" (p. 76), it is natural for them to think and talk about their students as well as how they experience their learning. Further, Hadar and Brody assert that "[r]eflection in the community invites feedback and helps others explore new ideas about teaching and moves thinking forward" (p. 68). The assertion, undeniably, reflects the perspective of the MTLs.

TLPL as a Collaborative Practice

The MTLs reported that TLPL is suited to provide mathematics teachers with opportunities to engage in collaborative learning. This conviction was predicated on their conception that when a mathematics teacher led the learning of her or his colleagues, other teachers were likely to feel welcomed to collaborate and freely interact with their leader as well as with each other beyond their learning sessions. For the MTLs, such an experience was not likely to happen in traditional teacher professional learning because of the bureaucratic nature of relations between education officers and teachers. Pili showed what her experience of facilitating the practice looked like as she narrated:

> It's really a different thing to be led by someone whom you share many aspects of the work you all do. When teachers gather

> for their learning and meet a teacher leading the sessions, I think, they simply become comfortable with each other and quickly become friends. So, such friendship enabled them to work together during the sessions. I think that's the aspect of this process, which I think is good for teachers in our places.

Pili's description is quite illuminating when thinking about what mathematics teachers could feel and how they could engage in their professional learning when they find a teacher colleague leading their learning. It shows a process upon which friendship developed among the teachers and their teacher leader, enabling them to engross themselves in collegial learning. Pili reported such a social aspect could emerge because mathematics teachers and teacher leaders shared many attributes and experiences related to their work of facilitating student learning of the subject. Pili's observation resonated with those of other MTLs, describing mathematics teachers' collaboration to develop as they see themselves as colleagues belonging to the same profession and teaching in comparable geographical contexts.

For the MTLs, TLPL did not just bring mathematics teachers and teacher leaders together, but it also enabled them to be and remain in long-lasting networks. For them, these networks were quite advantageous since they allowed teachers to continue working together, and to realize room to support each other in many ways, beyond the professional learning sessions. In the following quote, Anne showcases how she continually interacts with mathematics teachers who were in her sessions:

> I remember one day, which was a market day in our village, and I was just preparing myself to get there to do shopping, I received a phone call from one of my teachers who lives like seven kilometers from here, it's not like a village really, rather, you can call it a suburb. So, he was very low in his tone. He asked me if I can help with getting a car to pick up his pregnant wife to bring to our dispensary here. So, instead of going to the market, I decided to go to ask someone who owns a car in this village to go to pick up my fellow teacher's wife. After that then I informed other teachers of our sessions, about what is going on with our fellow. I remember seeing a few of them going to visit her. This is just one of the ways we help and support each other these days.

It is evident that collaboration went beyond professional learning sessions, to include non-educational collaborations and interactions. This perspective has the potential to reinforce the educational connections that the teachers have already established and maintain. Nussbaum-Beach and Hall (2012) supported both kinds of collaborations and interactions, maintaining that they make mathematics teachers become connected, finding "themselves not just learning how to be better educators but more tuned-in and effective people" (p. 39) within their schools and local communities.

Based on the MTLs' experiences, it appears that TLPL produce a friendly and collegial learning environment, which in turn encourages long-term collaboration among mathematics teachers and teacher leaders. Such an environment is conceived to emerge as teachers became leaders of teacher professional learning initiatives. The collegial environment is said to encourage teachers to feel more welcomed to actively work together with others during and beyond professional learning sessions. In such a space, as learned from the MTLs' accounts, teachers are encouraged to promote their own professional growth. It is even more clear that the same environment stimulates the resurgence of what Guskey (1995) termed, "the naturally occurring relationships among professionals" (p. 121) and what Murray

(2014) suggested, that: "[it] may help create shared professional culture, in which teachers in a school or district develop common understanding of instructional goals, methods, problems, and solutions (p. 17)."

TLPL as a Contextual and Relevant Practice

The MTLs conceived TLPL as a practice which was relevant to the need to improve student mathematics learning. Behind such a conception is their observation that the practice provided mathematics teachers with the freedom to contextualize their professional learning. In other words, the MTLs considered what teachers learned in TLPL to largely reflect the contextual realities of their pedagogical practices. As Kenny discussed:

> For me, by having a teacher there, I think the discussions will focus on teaching and learning. I don't expect something else to capture the interest of classroom teachers. It could be different to those PDs [professional developments] where teachers are told things that do not have any connection to the contexts of their work of teaching. And that's because the leaders of those PDs … have not taught the subject for many years. So, that's why I think this other way [TLPL] is the important thing.

In this quote, Kenny compared TLPL with other kinds of teacher learning, to better describe the relevancy of the former to teacher professional learning. From his viewpoint, the practice is germane to student mathematics learning, considering that the interest of many teachers is largely about their students and how the students could become successful in learning mathematics. Pili is confident that contextualization of professional learning becomes what she called, a "norm" when a mathematics teacher takes the leadership role in teacher learning. For her, "this type of learning is the only way for teachers to solve problems of their classes." She added, "teachers may decide to throw a math problem there for teachers … to work on it that she or he struggled to make sense of." Isile used a metaphor of a healing place to describe the TLPL context. Isile described the TLPL learning context as a place where mathematics teachers bring classroom 'diseases' they have suffered, to get healed through their interactions with their teacher colleagues and their teacher leaders. With such a situation, from his perspective, the practice stands out as not just relevant to the work of teachers but also context-specific, enabling teachers to attend to what is going on in actual mathematics classrooms.

It is apparent that the MTLs view TLPL as providing mathematics teachers with opportunities to contextualize their learning as relevant to student learning. These perspectives are in line with Keay and Lloyd's (2011) observation that teachers "want to focus closely on the specific needs of their pupils" (p. 52). As Murray (2014) observed, the practice is pertinent in improving schooling as it can "connect what teachers learn … with the daily challenges they face in the classroom" (p. 16). As Donaldson (2007) described, "teacher leaders have unique opportunities to keep the focus of their collective work on kids, on learning and on the effectiveness of that work" (p. 135). Such opportunities encourage teachers to capitalize on what overwhelms their classrooms to improve student mathematics learning.

TLPL as a Sustainable and Ongoing Practice

For many MTLs, TLPL is a sustainable practice that keeps mathematics teachers engaged in the process of expanding their professional knowledge base. The MTLs underscored the prominence of the practice in keeping the

professional learning alive through ongoing discussions and conversations among mathematics teachers. As Mazengo explained:

> This system of learning … involves leaders and teachers who live in the same areas. For that reason, then, there is a possibility for them to meet in formal or informal situations. So, teachers continue to talk about what they do in classes, what is not going well, and what is going wrong in their classrooms [and] they support one another.

Mazengo is confident that TLPL is powerful in offering avenues for mathematics teachers and teacher leaders to remain in touch when they return to their classrooms, continuing to engage in collegial dialogues and conversations meant to promote professional growth. Some of the MTLs, on the other hand, thought the practice provided what was lacking in traditional teacher learning. As Senzini explained:

> The issue that we had in those days is that we didn't have people to help us when the workshops and seminars were over, and we are back in our schools. I think that was the challenge that faced many of us. You find you need some support on how to apply something you learned, but oh … you don't get that support because people who taught us are nowhere to be found. With this new approach to learning, … it's very easy to get help from teacher leaders as they are just in schools, if not in this school, you may find one in the next school.

Drawing from his experience of taking part in different kinds of teacher professional learning, Senzini suggested that TLPL is a practice that enables mathematics teachers to continue to receive support and assistance even after the learning sessions are concluded. Relatedly, Gabby reported seeing the practice to "fill the gap that has stressed teachers for quite a long time." As he explained, this practice becomes important as "teachers find resource persons [teacher leaders] close to their places and [they] can call them anytime without a formal letter or appointment." He emphasized further that the practice was well-suited to help mathematics teachers and their teacher leaders to continually engage in supporting and assisting each other as they work to address pedagogical challenges that they face in their classrooms.

Moreover, Anne observed TLPL created a friendly, sustainable, collegial learning environment that invites mathematics teachers to participate in learning. She believed that "the situation in which teachers work with people they know and who are at the same level and close to them influences how they see each other." For her, "teachers can comfortably work together for a long time when led by people they know as their colleagues." Anne's comments highlight what could bind mathematics teachers and teacher leaders together during and beyond their learning sessions. With this practice, as she emphasized, mathematics teachers and their leaders become colleagues because of the nature of the treatment of each other during learning sessions. For Anne, it's such a sense of collegiality that makes members remain connected even after departing to their schools.

Isile described how TLPL is inherently a sustainable activity:

> Since the day teachers in our schools became aware that I'm also facilitating the learning of math teachers in the district, they have been in demand of me for their help. They have been calling me to go to their classes to help them with teaching, and others call me at our staff room to discuss some issues related to mathematics teaching. I have these teachers who call me to co-create teaching aids for their lessons. So, even

> though our sessions are off, I'm still working with teachers.

Isile was quite confident that TLPL is crucial in encouraging mathematics teachers to continue to engage in learning throughout their teaching career. From his perspective, when teachers take charge of their learning, professional learning becomes a common practice in schools, contributing to improving schooling. Consistent with the perspectives of the MTLs, Donaldson (2007) believed teacher leaders promote continuous teacher professional learning "because the relationships they have with fellow teachers keep them connected" (p. 135) beyond their sessions.

Summary and Discussion

The aim of this study was to explore the perspectives among Tanzanian mathematics teacher leaders on TLPL. The perspectives included TLPL as: participative and engaging; reflective and experiential; collaborative; practical and contextual; and ongoing and sustainable. Our results revealed that the MTLs conceived TLPL as a promising kind of teacher professional learning that enables mathematics teachers to experience opportunities to promote their professional growth with a hope to improve teaching and learning practices in their mathematics classrooms. In this section we provide a summary of the perspectives and discuss implications for practice in the Tanzanian mathematics teacher professional learning landscape.

Making Sense of TLPL as a Teacher Professional Learning Practice

One characteristic common to all the MTLs who shared their perspectives on TLPL is that they worked in rural and remote schools. Such an observation highlights the possibility that their perspectives of the practice was shaped by their experience of working in rural areas where opportunities for attending professional learning programs were relatively scarce. We are certain that such experiences triggered the MTLs to view TLPL as powerful in comparison to traditional teacher learning approaches. The former, TLPL is facilitated by teacher leaders who are also rural teachers. The latter, the traditional approaches, took place far from the schools and under the control of education officers who had minimal interactions with teachers after professional learning sessions and who often had minimal, if any, teaching experiences in rural schools.

Through our interpretation of the MTL's perspectives, we realized that TLPL has the potential to shift teacher learning from being a one- time, sporadic event to a process that empowers mathematics teachers to promote their professional growth while teaching in their school. One illuminating piece of information from the MTLs' accounts was related to their observation that through the practice, mathematics teachers and their teacher leaders became friends by working together during their learning sessions. It is ostensible that a sense of collegiality was responsible for making teacher professional learning continuing, encouraging teachers to communicate on matters related to enriching mathematics pedagogy. Consistent with the perspectives of the MTLs, Lieberman and Miller (2014) believed teacher leaders promoted continuous teacher professional learning because of the rapport they built with fellow mathematics teachers which kept them allied beyond learning sessions.

We became aware, from MTLs' experiential accounts, that TLPL was effective in helping mathematics teachers to engage in a powerful process that has the potential to improve teaching and student learning in their classrooms. Some teacher professional learning researchers are categorical about what teacher

leaders can bring in professional learning contexts if given the opportunity to facilitate the learning of teachers. Donaldson (2007), for example, noted that "teacher leaders have unique opportunities to keep the focus of their collective work on kids, on learning and on the effectiveness of that work" (p. 135). It is in this sense and the results of our study we are confident that teacher leaders are key in helping teachers develop the capacity they need to improve mathematics teaching and learning. Certainly, we learned that the MTLs saw themselves as being accessible to their teacher colleagues, in the event those colleagues needed support in untangling pedagogical complexities in their classrooms.

Implications for Practice

As revealed in this study, the first step in giving mathematics teachers control and voice over their professional learning is to empower them to become leaders and educators of the learning of other teachers within and outside their schools. The idea is to support their transition to becoming mathematics teacher leaders who can make a difference in helping mathematics teachers to promote their professional growth and thereby improve student mathematics learning in schools. Education systems, Tanzania's being no exception, are challenged to embark on empowering mathematics teachers to develop a sense of what it means and takes to work as a leader of teacher professional learning for them to be able to support the professional growth of other teachers. Such empowerment is crucial as TLPL is a new practice in Tanzania.

One more noteworthy implication of this study would be to rethink teacher education curriculum to consider how it might be redesigned to help pre-service teachers attend to the demands of the contemporary landscape of education. Teacher education curriculum in Tanzania needs to be redesigned in order to provide prospective mathematics teachers with the skills they need to engage in the ongoing work of deepening their professional knowledge. The intent is to allow teacher educators spaces to more explicitly engage in preparing pre-service teachers who could be able to monitor their own professional growth while in schools, so to improve mathematics education in classrooms. In particular, the curriculum might include opportunities for pre-service teachers to become aware of what it means and takes to facilitate the professional learning of mathematics teachers. As such, it could potentially shift the context of where pre-service teachers are educated as well as to expand the knowledge of teacher education as inclusive of people and places not yet commonly considered.

Conclusion

Our results are encouraging because of the nature of the perspectives among MTLs on TLPL. Even though the practice is new in the Tanzanian teacher education landscape, the MTLs consider TLPL a promising kind of teacher learning that has the potential to help mathematics teachers to be responsible for their professional growth. It was apparent that the MTLs saw the practice as valuable in facilitating teacher participation and engagement in learning, encouraging long-term collaboration among teachers, inviting integration of classroom experiences, inviting contextualization of professional learning, and situating ongoing professional learning of mathematics teachers in schools.

Encouragingly, it is evident that mathematics teachers who served as the MTLs relished the opportunity of taking charge of their own professional learning when empowered to understand what it means and takes to lead the learning of other teachers. We believe that a description of the MTLs' perspectives on the practice offers opportunities to practically

rethink teacher professional learning in Tanzania.

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