LESSON STUDY

SCALING UP PEER-TO-PEER LEARNING FOR TEACHERS IN ZAMBIA

Haeyeon Jung, Christina Kwauk, Ainan Nuran, Jenny Perlman Robinson, Marijke Schouten, and Sheikh Islam Tanjeb

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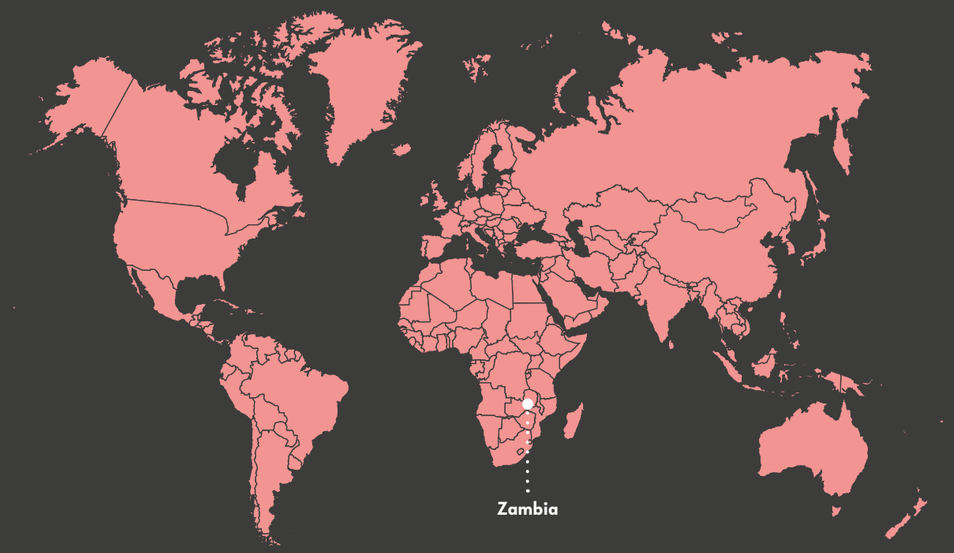
Lesson Study at a glance

EDUCATION LEVEL:

Primary, secondary



LOCATION:

Zambia (all 10 provinces)

FOCUS OF INTERVENTION:

Peer-to-peer learning by in-service teachers for primary and post-primary levels

INTERVENTION OVERVIEW:

Lesson Study (2005–15), implemented by the Zambian Ministry of General Education in partnership with the Japan International Cooperation Agency (JICA), is a peer-to-peer collaborative learning practice where primary or secondary level teachers share knowledge and skills to continuously improve teaching through a monthly cycle of Plan-Do-See activities. Every month, depending on the calendars of individual schools and the number of teachers available, teachers conduct Lesson Study activities where fellow teachers plan and observe a lesson followed by a discussion about ways to constructively improve these lessons. Through these conversations, teachers learn techniques to improve learner-centered teaching methods and develop problem solving and critical thinking skills. The method aims to strengthen school systems by encouraging teamwork among teachers and improving supervision among school managers.

TYPE OF LEARNING MEASURED:

Mathematics and science mastery (measured by national examinations)

COST:

Total budget (between 2005 and 2015) was $15.9 million from the Zambian Government (approximately 93 percent) and $1.2 million from the Japanese Government (approximately 7 percent).

SIZE:

Direct reach—By 2015, 46,058 teachers. *Indirect reach*—By 2015, 1.8 million students in more than 50 percent of government primary and secondary schools.

IMPACT:

Teaching methods—Teaching approaches started changing from traditional chalk and talk instructional methods to an inquiry-based, learner-centered approach that integrates hands-on activities to help students develop critical and creative thinking. *Student learning outcomes*—Three years of improved teaching skills in the target province were correlated with improved student pass rates on the Grade 12 national exam; for example, students in the target province scored 12.4 percent higher on the science exam and 19.2 percent higher on the biology exam, compared to students in non-target provinces. *Spread*—Convinced by the effectiveness of Lesson Study, Ministry of Education officials developed a Master Plan in 2010 to spread the program across all of Zambia.

Background

Zambia's introduction of free basic education in 2002—a policy reform mandated by the country's "Educating our Future" framework (1996) for developing its national educational system—saw access to basic education increase substantially within a few years, allowing the country to move from 63 percent of students completing primary school in 2000to near universal primary completion (94 percent) by 2010 (UNESCO 2012). This success in primary school completion, however, did not translate into success in improving students' learning outcomes. Amongst their regional peers, Zambian students continued to score close to or at the bottom on The Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) assessments for Grade 6. In 2007, for example, Zambian students' scores in both reading and mathematics fell since 2000, dropping the country's rankings in reading from 13th (out of 14) to 14th (out of 15), and in mathematics from 12th (out of 14) to 15th (out of 15) (SACMEQ 2016).[1] The percentage of students mastering the minimum required knowledge in reading and mathematics also dropped during this period (UNESCO 2014).

The Government of Zambia attributed much of the low performance of students to the quality of teachers in Zambia (UNESCO 2012). While on the one hand there was insufficient supply of qualified teachers, on the other hand there was an overall lack of knowledge and skills among existing teachers. In 1998, the government had developed an in-service teacher training program called the School Program of In-Service for the Term (SPRINT) to give its teachers greater access to continuing professional development opportunities. However, as demonstrated by SACMEQ scores, student learning outcomes continued to remain below regional average. Against this backdrop, in 2005, the Government of Zambia invited the Japan International Cooperation Agency (JICA), a technical cooperation organization of the Japanese government, to strengthen its teaching and learning achievement using a school-based continuing professional development program called Lesson Study.

Adapting Lesson Study from Japan to Zambia

Lesson Study was not created from scratch. Originating in Japan during the 19th century as a way to help introduce Japanese teachers to whole classroom instruction, the continuing professional development program is now a common practice of Japanese teachers to share and improve their knowledge and skills. Lesson Study gained international attention in the 1980s and 1990s when a group of American and Japanese researchers highlighted the link between Japanese students' high science and mathematics achievement and the Lesson Study practices of their teachers (Stigler and Hiebert 1999; Isoda 2007). Interest in Japanese style teaching by overseas education officials led to the first international adaptation of Lesson Study in 2002 through a technical cooperation between JICA and the Philippines. Since then, the practice has been adapted by more than 50 countries around the world, and JICA has officially supported 24 countries in incorporating it into their national teacher education programs.

Lesson Study was introduced to Zambia in 2005 as a two-year pilot program for teachers in the Central Province under the auspices of the Strengthening Mathematics, Science, and Technology Education project. At the Government of Zambia's request to JICA to help make SPRINT, its existing system of in-service teacher training, more effective and efficient, the two entities worked together to adapt Lesson Study to the Zambian context. Specifically, seeking to deepen teachers' understanding of learner-centered teaching as well as to develop their capacities and skills to implement learner-centered lessons, Lesson Study's foundational pillars rested on a bottom-up approach to identifying positive solutions to improving the quality of education in Zambia.

Every month, teachers gathered together by grade level or by subject, depending on the size of the school, to work collaboratively to identify challenges in their classroom, to develop lesson plans to address them, and to practice delivering the lesson with other teachers while observing and offering constructive feedback. Appreciating self-critique and welcoming mistakes were central to this practice of Plan-Do-See, which was entirely teacher led and teacher driven. There were no trainers or trainees; instead, teachers were at the center and forefront of the Lesson Study approach as key change agents, a rarity in interventions aimed at improving educational quality. Experienced teachers or those teachers who demonstrated interest were appointed as "lesson study facilitators" and provided specialized training with Lesson Study experts overseas in Japan or other countries where the approach was also being implemented in order to be able to give more technical input into lesson study feedback activities.

Through the joint effort early on between the Government of Zambia and JICA, the Japanese practice of Lesson Study was adapted and modified to fit the Zambian educational context. Although the core components—in which teachers share knowledge through planning, demonstrating, and critiquing lessons—remained the same, the four-step model had to be adapted in order for Lesson Study to work in Zambia. Knowledge and content gaps were and continue to be a challenge for math and science teachers throughout the country, and teachers often faced great difficulty creating comprehensible lessons in these subjects, especially at the higher levels. As a result, four additional steps were added to the Lesson Study cycle to ensure that teachers had the opportunity to continue to share and practice among each other, building their confidence in delivery while helping them and their peers to master the content (Bessie Tembo, interview by Haeyeon Jung, Ainan Nuran, and Marijke Schouten, March 15, 2015; Edward

Tindi, interview by Haeyeon Jung, Ainan Nuran, and Marijke Schouten, March 27, 2015). Instead of ending at step 4, the Zambian Lesson Study activities carried on until step 8:

1. Define the challenge: Teachers' groups identify and discuss a problem or challenge in the delivery of a particular lesson, a teaching technique, or a classroom issue, which will serve as the target Lesson Study of the month.

2. Plan a lesson: Based on the identified challenge area and the objectives of the lesson, teachers collaboratively develop a lesson plan by discussing an appropriate learner-centered approach and materials required for teaching and learning.

3. Implement a demonstration lesson: A teacher is selected by the group to conduct the planned lesson in a classroom under normal circumstances at school. In some schools, school managers may schedule this so that each teacher has the opportunity to teach one demo lesson per school year. Other teachers, including the head teacher or other school managers and education experts, observe the lesson, paying particular attention to points outlined by an evaluation guide.

4. Discuss lesson and reflect on its effect: Teachers meet to reflect upon the demonstration teacher's delivery and to discuss the effects of the lesson, including by the demonstration teacher him- or herself and the observers. The focus of the discussion is to improve the lesson for better teaching and learning.

5. Revise the lesson: As a team, the teacher's group revise the lesson plan based on the critique and feedback. Changes and adjustments are made to a modified lesson plan.

6. Conduct the revised lesson: The same demonstration teacher presents the modified lesson plan to another class, while the other teachers and managers observe the session, paying particular notice to whether and how improvements to the lesson are working.

7. Discuss lesson and reflect on its effect: The group meets again to discuss observations made of the change between the first and revised lesson delivery, appreciating even the most minimal improvements. Further suggestions for improvement are discussed for each teacher to apply to their individual daily lessons.

8. Compile and share reflections: Reflections and suggestions made throughout the prior steps of the Lesson Study are compiled and recorded as a group. This record serves as a reference for teachers, and the source of a periodical report presented at stakeholders' workshops held in April and August of every year to share experiences and issues pertaining to Lesson Study practice in schools.

The process of arriving at this unique 8-step Lesson Study cycle took time to craft in the beginning. But once the Government of Zambia had adapted a model that would work in the Zambian educational context, the process of scaling Lesson Study across the country began to take shape. While Lesson Study started in 2005 initially targeting 425 grade 8–12 mathematics and science teachers in 200 schools in Central Province, by the end of phase 1 two years later it was practiced by nearly 2,000 teachers in Grades 8 through 12—in some schools, not just in science and mathematics (Lesson Study Record 2007). Phase 2 began in 2008 with Lesson Study rolling out to two additional provinces in Zambia, reaching 14,000 teachers in more than 1,000 schools across all three implementing provinces by the start of phase 3 in 2011. Phase 3 introduced the program to all of the remaining provinces in the country, reaching over 46,000 teachers by 2015 (Nakai 2016). Over the 10-year period of scaling up across Zambia, the popularity of Lesson Study grew so high in some areas that community schools outside of targeted rollout zones began to implement Lesson Study activities even without the added benefit of technical assistance or support from the government or from JICA (Ministry of Education and JICA 2010). For those schools in the targeted rollout zones, as Lesson Study moved further from the capital and Central Province, adapting Lesson Study became more difficult. But, by gradually scaling Lesson Study across the country, the government could observe the program's impact, such as improved teaching skills of teachers and math and science pass rates of students, before incorporating the method within its national development plans. Today, although JICA's official support of Lesson Study has expanded to preservice education (phase 4, 2016–19), Lesson Study by in-service teachers in Zambia continues to expand under the direction and support of the government, with the aim of reaching 90,000 teachers in 9,500 schools by 2023 (Nakai 2016).

Impact and evidence of success

In terms of the program's impact on student learning in Zambia, results from an internal monitoring and evaluation study completed in 2010 found that after three years of introducing Lesson Study in Central Province, students' pass rates were 12.4 percent higher in physics and chemistry and 19.2 percent higher in biology, compared to schools in other provinces (Ministry of Education 2010). Five years later, the Ministry of Education's impact assessment of the program across the three Phase 2 provinces(Central, Copperbelt, and Northwestern Provinces) found continued improvement among students' science pass rates (from 53 percent in 2009 to 63 percent in 2013), as well as in mathematics (from 40 percent in 2009 to 49 percent in 2013)—a subject that had previously seen only small levels of improvement in the 2010 study due, perhaps, to the later rollout of Lesson Study activities for mathematics teachers (in 2008) compared to science teachers (Ministry of Education 2010). The 2015 impact assessment also consistently found that higher levels of Lesson Study practice in schools were correlated with higher student achievement on national exams (MESVTEE and JICA 2015).

Internal evaluations of teachers' implementation of learner-centered lessons in science and mathematics have been slightly less impressive, although the impact of Lesson Study on teachers' attitudes toward their respective subject areas, their students, and the influence of their

teaching methods on students' academic performance has been generally positive (Lingambe, Kasonde, and Nakai 2014; MESVTEE and JICA 2015). That is, while evaluations found that the Lesson Study practice improved teachers' lesson planning and students' performance on exams, teachers' understanding and delivery of learner-centered pedagogy was still relatively superficial (Lingambe, Kasonde, and Nakai 2014). Lesson Study activities helped teachers make progress in terms of adapting more learner-centered practices (i.e., inquiry-based lesson planning), but teachers continued to grapple with the quality of delivering learner-centered lessons (i.e., incorporating of a variety of learning approaches, questioning techniques, and effective use of teaching-learning materials) and often reverted to traditional "chalk-and-talk" methods, perhaps due to a persisting orientation in the curriculum toward test scores (MESVTEE and JICA 2015).

Also, while some teachers and head teachers still hold negative attitudes toward continuing professional development through the Lesson Study practice—seeing it as burdening them with additional work—others now see the value of continuous training throughout their careers. According to self-reported data, the latter group of teachers have experienced a cultural shift in thinking about learning as a lifelong process—a stark contrast to their previous attitudes, which held that they had learned all that they needed to learn while attending teachers' college (Edith Chola, interview by Haeyeon Jung, Ainan Nuran, and Marijke Schouten, March 26, 2015). Moreover, this group of teachers are also more likely to have higher levels of intrinsic motivation to participate in Lesson Study activities, having personally witnessed the improvement in their students' performance (MESVTEE and JICA 2015; Edith Chola, interview by Haeyeon Jung, Ainan Nuran, and Marijke Schouten, March 26, 2015; Baba and Nakai n.d.). This shift in perspective toward continuing education and in-service training, as well as toward the relationship between their teaching methods and their students' academic achievement, is also beginning to appear at a national level. According to a senior JICA technical adviser, the Zambian Ministry of Education is beginning to shift away from a focus on content-based curriculum toward a focus on skills and values, and away from a focus on test score improvement toward one on quality teaching through problem solving and inquiry-based methods (Kazuyoshi Nakai, interview by Haeyeon Jung, Ainan Nuran, and Marijke Schouten, March 15, 2015).

The greatest evidence of Lesson Study's success has been its practice not only by nearly half of teachers across Zambia, but also by teachers across Sub-Saharan Africa. Zambia's experience, along with other countries' experience and achievements made through Lesson Study activities have helped lead to the adoption of the practice in at least 21 other Sub-Saharan African countries through the 27-country network of Strengthening of Mathematics and Science Education in Western, Eastern, Central and Southern Africa (SMASE-WECSA). Created in 2003 with support from JICA, SMASE-WECSA served as a regional platform on which in-service teacher training providers could share knowledge and experiences of mathematics and science education at the secondary and, later in 2009, at the primary school levels. SMASE-WECSA's third technical workshop was held in Zambia in 2013, during which Zambia's experience with Lesson Study was shared with participating countries.

Timeline of key events

1998
Government of Zambia introduces the School Program of In-service for the Term (SPRINT), an in-service, school-based continuous professional development program.

2003
JICA and the Kenyan government form the network, "Strengthening of Mathematics and Science at Secondary Education in Western, Eastern, Central, and Southern Africa" (SMASSE-WECSA) to share the knowledge and experiences of mathematics and science education at the secondary school level among 27 member countries, including Zambia.

2005
Lesson Study is introduced in Zambia as a pilot program in the Central Province to strengthen SPRINT under the technical cooperation project with JICA, "Strengthening Mathematics, Science, and Technology" (2005-7).

2007
The *Lesson Study Implementation Guideline Booklet* is developed and disseminated to Education Resource Centers and Education Support Teams as well as to schools throughout Zambia.

2008
Lesson Study begins expanding to all grade levels and subjects in Central Province, and rolls out to two new provinces, Copperbelt and Northwest Province, under Phase 2 of the technical cooperation project with JICA.

2009
A *Teaching Skills* book and *Management Skills* book are developed as part of activities to support Lesson Study implementation.

SMASSE-WECSA expands its collaborative network to include primary education in addition to its focus on secondary education, becoming "Strengthening of Mathematics and Science Education in Western, Eastern, Central, and Southern Africa" (SMASE-WECSA).

2010
The Ministry of Education creates a master plan for school-based continuous professional development through Lesson Study.

2011
Lesson Study is renewed through the Strengthening Teachers' Performance and Skills (STEPS) project (2011-15), and begins phase 3 rollout to all remaining provinces.

2012
Lesson Study becomes a national program throughout Zambia.

2013
JICA-supported SMASSE/SMASE projects officially end.

2014
The *Teaching Skills* book is revised.

2015
The *Management Skills* book and Lesson Study Implementation Guideline are revised.

JICA technical assistance to Lesson Study for in-service teachers officially ends.

2016
Phase 4 of Lesson Study begins rollout in preservice teacher training contexts.

Key drivers behind scaling impact

How was Lesson Study adapted from Japan and successfully scaled across Zambia? The answer is not overnight, as quick expansion would have placed significant pressure on facilitators of Lesson Study to move around the country to implement training, resulting in a potentially rigid and top-down teacher training program. Instead, Lesson Study's success was achieved over several stages between 2005 and 2015, during which the program was continuously refined to fit the local context while maintaining an eye on quality and cost effectiveness. And, perhaps most importantly, such a gradual approach to scaling enabled the program to take its time growing and learning from its most critical support base: teachers.

In particular, by centering the intervention on teachers as change agents rather than recipients of training, Lesson Study did not become a training program exported from one context to the next, rapidly changing teaching quality as it moved from school to school. Instead, by focusing on teachers as key actors, the program became a highly localized, time-intensive teacher improvement model, requiring time to develop trust among teachers, to normalize a collaborative approach to teacher training, and, ultimately, to change a culture of teachers and teaching. As the remainder of this case study demonstrates, these and a number of other factors, including the long-term cooperative partnership between the Government of Zambia and JICA and an enabling policy environment, came together to support the successful scaling of Lesson Study across Zambia.

Employing teachers as change agents

A necessary component to Lesson Study's success was teacher buy-in. Yet, in an environment where teachers traditionally do little by nature of sharing their lessons with each other or seeking out or receiving advice and feedback on their teaching, Lesson Study, according to JICA officials, had to change the mindsets of teachers toward the practice of continuing professional development—a new concept for many—as well as change a culture of teaching in Zambia. To illustrate, many teachers expressed their initial reluctance to participate in Lesson Study, believing that the program was too time consuming, an undue burden to an already overloaded schedule, and unnecessary as they believed they had all the knowledge and training they needed from teachers' college. Teachers hesitated to volunteer a lesson demonstration because they felt they would be graded. And, with the earlier focus of the government on improving access to primary education, average class sizes had increased significantly, making learner-centered approaches an even greater challenge, not to mention in rural areas facing teacher shortages.

Indeed, one of the greatest challenges getting Lesson Study off the ground was in impressing upon teachers the importance of continuing their own education and training. Early advocates found that the key was getting school management and head teachers on board to support teachers and to provide them with the skills and supplies they required in order to take on the practice of Lesson Study as part of their daily teaching practice. This first step was critical to demonstrate to teachers, especially experienced teachers and degree holders, that the program was not about looking at test scores and grading teachers on their ability to improve student performance, but rather that the value rested in providing teachers themselves with support and resources to do their job more effectively. Indeed, the program—and the government—had to demonstrate to teachers that it did not start from a position that emphasized what teachers lacked (known as a deficit approach) or viewed them as targets of training, forcing them to take on the added task of participating in regular professional development activities. Rather, it recognized that teachers could produce their own ideas to improve their teaching and could, with support from peers, be the main agents in their own training. Changing the mindset of teachers thus required creating a culture of trust and professional accountability among teachers, school managers, and the government for the first time (OECD 2011). This also meant giving teachers the space to build upon their assets, empowering them to become change agents themselves.

As teachers began to witness the difference in the performance of their students, many began to appreciate the impact of their Lesson Study practice. Additionally, the program's emphasis on identifying challenges immediately faced by teachers in the classroom and on building in opportunities for teachers to immediately test out and reflect upon modified lesson plans ensured that Lesson Study activities were highly relevant and meaningful to teachers. In short, teachers were not merely taught new teaching techniques during school-based in-service trainings, but rather were empowered to identify what was needed, collaboratively develop a solution via a lesson plan, and then practice delivering it and discussing the experience with peers (Ministry of Education, Zambia 2015). In turn, this led many teachers to experience a positive and timely return to their participation in Lesson Study, making it easier and desirable to incorporate it as a tool into their daily professional lives. In these ways, teachers began to believe in the program, making the practice their own, and making possible scaling up without much teacher resistance.

Adopting flexible adaptation and replication

Another key feature of the program, according to JICA officials, has been Lesson Study's emphasis on "flexibility and autonomy rather than uniformity" (Baba and Nakai n.d.). Rather than sticking to rigid project design agreements, a focus on evolving practices and interventions during implementation greatly enhanced the program's adaptability to a variety of educational settings as disparate as Japan and Zambia. For instance, the original Lesson Study in Japan followed a four-step model, but in Zambia, as discussed earlier, four additional steps of revision and observation were added to the core of Lesson Study to help fill knowledge and content gaps among teachers by peers and to help reinforce new learner-centered teaching practices.

The flexibility in design and implementation also enabled the program to be adapted to a variety of schools first throughout Central Province and then throughout the country. Small schools with a few number of teachers could conduct Lesson Study together with neighboring schools, while big schools with a large number of teachers could organize the practice by groups of teachers teaching particular subjects or specific grade levels. Moreover, because of the program's emphasis on teachers identifying solutions to teaching challenges collaboratively through teamwork and by drawing on each other's experiences and expertise, the program could be replicated in any school no matter how limited or abundant the school's resources.

Not only did the overall flexibility and replicability of the Lesson Study practice allow Zambia to adapt the program as it saw fit within its own country context, but it also helped key stakeholders within the Government of Zambia to turn an imported model into a local one. It also helped that it was a relatively low-cost in-service teacher training program, with a total budget of $16 million over 10 years. Together, Lesson Study's low price tag along with its customization facilitated its eventual institutionalization within the national education system, helping to build a strong sense of ownership over the program (by teachers, school managers, and government officials) in ways that made the government more inclined to support the program financially over the long term, to invest in its design and implementation, and to replicate the model in more schools and provinces.

Leveraging existing national structures

Lesson Study was introduced in Zambia at a time in which the national government had already begun to institute an in-service teacher development program through its nationwide clusters and networks of resource centers. Like Lesson Study later, the SPRINT program involved teacher group meetings in an attempt to institutionalize teacher collaboration. In practice, however, the SPRINT program suffered from inconsistency; teacher meetings were not used efficiently to discuss concrete issues concerning effective teaching; school SPRINT coordinators lacked organizational and facilitation skills; teacher resource centers were equipped with inadequate educational materials; and weak links between basic and high schools meant only teachers at the basic education levels were being served (Mwansa 2011; Kazuyoshi Nakai, interview by Haeyeon Jung, Ainan Nuran, and Marijke Schouten, March 15, 2015; Baba and Nakai n.d.).

In this context, Lesson Study was able to build upon and revitalize a practice of teachers meeting regularly that already existed at the school level prior to the program's introduction. With the same goal of improving teacher quality, Lesson Study strengthened SPRINT by focusing specifically on providing school-based continuing professional development in mathematics and science education. It increased school management's stakes in the program by involving them as advocates of Lesson Study and observers during demo lessons, which in turn ensured that Lesson Study activities (like planning, demo lessons for each teacher, and weekly meetings for reflective discussions) were integrated into the school calendar for all teachers to attend and participate. JICA's technical assistance providing teachers with an evaluation instrument also helped to serve as a guide for constructive discussions, increasing the likelihood that teacher meetings would be used productively toward improving teachers' delivery of lessons.

Designed to complement the existing in-service training program, Lesson Study was quickly incorporated into existing structure rather than remaining an external project. Indeed, its level of integration into teacher support structures at all levels of the Zambian education administration helped to make Lesson Study even more a Zambian-run program than a Japanese one. Beyond the school level integration discussed previously, Zonal Education Support Teams (ZEST), District Education Support Teams (DEST), Provincial Education Support Teams (PEST), and the National Education Support Team (NEST) provided the necessary institutional support to ensure education standards were being met or that policy formulation was followed up with implementation support. Resource Centers at the provincial, district, and zonal levels also served as places for teachers to access learning materials and support. With this high level of institutionalization and the strong infusion of local ownership, many believed that Lesson Study was part of the Government of Zambia's overall education development program and not any particular donor project that could end once donor support concluded.

Embracing local champions

As mentioned above, Lesson Study was introduced in Zambia at the request of the Zambian government. But this did not happen until after officials from Zambia had the opportunity, with the assistance of JICA, to learn about and observe the program in schools in other implementing countries like the Philippines. During the process of studying the Lesson Study cycle in action and learning from Filipino teachers about their experiences, officials in Zambia began to see the benefits and opportunities for the development of teacher capacity in their own country. Consequently, a small group of advocates emerged early on in support of the program, becoming a core driving force within government and leaders in the effort to improve and scale up the program.

Once Lesson Study was brought to Zambia, these local champions, like Benson Banda, head of the Zambian National Science Center and current chairperson of SMASE-AFRICA, spent extensive time in the implementing provinces to ensure implementation took place seamlessly, appointing technical and local experts as needed to assist in the process. As a former schoolteacher turned education policymaker, individuals like Banda held insights into the actual situations in which teachers were working and the kinds of challenges they faced in practicing learner-centered methods. In this way, his and others' advocacy for Lesson Study was grounded in local knowledge—on one hand, adding credibility to the program's design and adaptation; and on the other hand, helping to ensure that the government viewed the program as a long-term investment in improving the quality of education in the country.

Developing a cooperative partnership between government and donor

Beneath the successful adaptation, localization, and expansion of Lesson Study in Zambia was the partnership between JICA and the Government of Zambia. First, the government was willing to institutionalize Lesson Study within its wider Education Development Plan and, throughout the scaling up process, committed a large number of personnel to ensure its success. Its contribution of over 90 percent of Lesson Study's program budget over the ten years further solidified its investment in the program as a long-term solution to improve educational quality, bringing in significant continuity and allowing for greater integration among implementation stakeholders. Second, JICA played an instrumental role in providing extensive input and technical assistance to the program and remained a committed partner for ten years, providing between 5 and 30 percent of Lesson Study's program budget toward technical support and training—significantly, none of JICA's funding went to day-to-day program implementation (personal communication, Kazuyoshi Nakai and Jenny Perlman Robinson, March 14, 2016). JICA provided overseas training in Kenya, Malaysia, the Philippines, and Japan early on to nearly 414 Zambian core counterparts, including education officers and teachers, to introduce them to learner-centered approaches and the management of teacher education. As the project moved beyond the pilot phase, JICA continued overseas training for Zambian educational personnel and the project's core members.

One important feature of this partnership is that JICA viewed itself as a technical partner to the improvement of service delivery, and that the Lesson Study program in Zambia belonged fully to the Government of Zambia. The nature of this partnership not only gave Zambia the space it needed to adapt and localize the program in order to make it work, but also transformed the space in which development partners interacted. According to Ruth Mubanga, the director of education and specialized services in the Zambian Ministry of Education, "Phase 1 [of Lesson Study] was designed with less Zambians involved, but Phase 2 was collaborative, and the current Phase 3 was discussed more from the Zambian front than the Japanese front" (Mubanga 2012).

But this cooperation between JICA and the Government of Zambia in the education sector has had a long-standing history. Since 1998, JICA has sent Japanese Overseas Cooperation Volunteers to Zambia to work as teachers, especially in mathematics and science, and has helped to build schools throughout the country. The invitation to bring Lesson Study occurred at a time in which Zambia was seeking solutions to address the challenge of providing continuing professional development for its teachers, and JICA so happened to have a nation-wide model that had been successful since the 1960s.

Encouraging an enabling policy environment

This points to a final underlying driver to Lesson Study's success: its leveraging of existing policy frameworks. As mentioned above, improving the quality of teaching had been one of the key agenda items of Zambia's education development plan. In response, the Government of Zambia had established its own school-based in-service teacher training system, SPRINT, in 1996. However, it became apparent within a few years that something was needed to vitalize the system and to motivate teachers to participate. Lesson Study proved to be a simple, yet novel intervention that, once injected into the SPRINT framework, could help catalyze its teacher professional development program.

The success of the Lesson Study pilot provided the Government of Zambia with an even further opportunity to align the intervention within the existing policy structure and educational infrastructure. Indeed, having already demonstrated its value to the country's teachers, the government created in 2010 a master plan for school-based continuing professional development, which included key strategies for expanding Lesson Study to the remaining provinces by 2013 and to colleges of education by 2023. The government complemented these efforts with the National Implementation Framework for the education sector, demonstrating even further the government's desire and seriousness to scale up Lesson Study.

Over the last ten years, Lesson Study has persisted over several different government administrations, and Zambia's most recent administration change in 2015 shows no plans to significantly change the program either. Although, with JICA technical assistance to Lesson Study officially concluded by 2015, a new JICA-supported project started in 2016 to set up Lesson Study in colleges of education where college lecturers can begin integrating the practice of continuing education and professional development into pre-service teacher training (Malambo Luckson, interview by Haeyeon Jung, Ainan Nuran, and Marike Schouten, March 17, 2015). As Lesson Study continues to grow in Zambia, the roles of higher level Education Support Teams that were once critical in the initial design and implementation phases of the program have begun to diminish and are being replaced by the increasing leadership and planning roles played by teachers and other stakeholders, like school managers. According to Kazuyoshi Nakai, a chief adviser of the JICA technical cooperation project, other implementing countries like the Philippines also saw similar shifts in key players after 5 to 10 years of implementation in which the highest policy makers were no longer in the loop in terms of Lesson Study activities in schools, but teachers continued to practice Lesson Study on the ground. This, according to Nakai, is the ideal outcome: even if top-level officials change, teachers can carry on (Kazuyoshi Nakai, interview by Haeyeon Jung, Ainan Nuran, and Marijke Schouten, March 27, 2015).

Lessons learned

- Even though the Government of Zambia experienced a successful pilot of Lesson Study, the country opted for a more *staged approach to scaling over the course of 10 years* in which expansion first took place across all grade levels and all subjects in the pilot province, followed by expansion to two new provinces before finally rolling out to all remaining provinces in the country.

- JICA was a committed partner throughout Lesson Study's 10 years of growth, development, and expansion. Its *cooperative partnership* with the Government of Zambia was critical to creating a healthy balance of autonomy and cooperation, particularly in providing the necessary space for local stakeholders to adapt Lesson Study to the local context and providing technical assistance and support when the program needed an external catalyst or extra guidance.

- The success of Lesson Study was dependent on the view that *teachers are agents of change*, rather than targets of training. This shift in thinking not only helped to change the mindset of teachers toward continuing education and professional development, relatively new concepts in the Zambian teaching profession, but also demonstrated to teachers the respect that the Government of Zambia held for its teachers. That is, as a teacher training program, Lesson Study did not start from the perspective that teachers lacked skills, but rather that teachers brought important assets to the table and could build upon these themselves if given the space to do so. Teacher buy-in was critical to institutionalizing and scaling Lesson Study, and more importantly, to integrating the practice as part of a teacher's daily practice on the ground, unconnected to the program's administration at higher levels.

- A key feature of Lesson Study was its *flexibility in design and implementation*, enabling an imported model from Japan to be adapted into a local model that responded to the diversities of the local Zambian education context. For instance, adding four additional steps to the core four-step model ensured the lesson study cycle helped to fill knowledge and content gaps among teachers and to reinforce new learner-centered teaching practices. And, the approach's emphasis on teacher-identified solutions to teacher-identified challenges ensured the practice could be replicated in any school despite the school's size or level of resources.

- The Zambian government invited JICA to bring Lesson Study to Zambia as part of the country's national teacher professional development reform. Lesson Study was thus designed to *compliment an existing in-service training program*, rather than operate as a parallel project. By *leveraging existing structures of support*, including a countrywide network of Teacher Resource Centers with officers tasked with guiding and monitoring these new practices, Lesson Study quickly became institutionalized within the national education system.

- Another key factor in the success of scaling Lesson Study across all levels of the Zambian education system was strong *government ownership* of the program and the subsequent *enabling policy environment that this engendered*. Not only did the government create a Master Plan for the strategic expansion of Lesson Study across all provinces, it also contributed approximately 90 percent of funding to the program over the past 10 years. This helped to create a greater sense of local ownership and the feeling that Lesson Study was part of the Zambian government's overall education development plans, not a donor-sponsored project that could end upon completion of funding.

- *Local champions* of Lesson Study were another core driving force behind the government's long-term support of the program. These champions, especially those who held insights into the local realities of teaching and learning in Zambia, helped to ensure implementation took place seamlessly and increased the credibility of the program's design and adaptation.

References

Baba, Takuya, and Kazuyoshi Nakai. No date. "Teachers' Institution and Participation in a Lesson Study Project in Zambia: Implication and Possibilities." http://aadcice.hiroshima-u.ac.jp/publications/sosho4_2-06.pdf.

Isoda, Masami. 2007. "A Brief History of Mathematics Lesson Study in Japan." In *Japanese Lesson Study in Mathematics: Its Impact, Diversity, and Potential for Educational Improvement*, edited by Masami Isoad, Max Stephens, Yutaka Ohara, and Takeshi Miyakawa. Singapore: World Scientific.

Lesson Study Record. 2007. *Datasheet on the Impact of Lesson Study in Zambia.* Lusaka: Ministry of Education.

Lingambe, Allan, Emelia K. Kasonde, and Kazuyoshi Nakai. 2014. "Realizing Learner-Centered Lesson through Lesson Study: Zambian Experience in African Context." Paper presented at International Conference of the World Association of Lesson Studies, Bandung, Indonesia, November 25–28.

MESVTEE and JICA (Ministry of Education, Science, Technology, Vocational Training, and Early Education; and Japan International Cooperation Agency). 2015. *Report on the Impact Assessment of Lesson Study in Zambia: Strengthening Teachers' Performance and Skills (STEPS) Project*. Lusaka and Tokyo: MESVTEE and JICA.

Ministry of Education, Zambia. 2010. *Report on the Impact Assessment of the School-Based Continuing Professional Development Programme in Central Province.* Lusaka: Ministry of Education.

———. 2015. *School-Based Continuing Professional Development (SBCPD) Through Lesson Study: Implementation Guidelines*, 5th edition. Lusaka, Zambia: Ministry of General Education & Japan International Cooperation Agency.

Ministry of Education, Zambia, and JICA (Japan International Cooperation Agency). 2010. *The Report of Joint Terminal Evaluation on SMASTE School-Based Continuing Professional Development Project Phase II.* Lusaka and Tokyo: Ministry of Education, Zambia, and Japan International Cooperation Agency.

Mwansa, Phillip. 2011. "Implementation of the School Programme of In-Service for the Term (SPRINT) in Selected Basic Schools of Chipata District of Zambia." http://hdl.handle.net/123456789/3322.

Mubanga, Ruth M. 2012. "School Program of In-Service Training for the Term (SPRINT) Program in Zambia: A Case of Collaboration towards Self-Reliant Education Development." http://home.hiroshima-u.ac.jp/cice/wp-content/uploads/Forum/JEF9/Ruth-Mubanga-e.pdf.

Nakai, Kazuyoshi. 2016. "Lesson Study in Zambia: Practice of Finance for Scaling Up." Presentation given to the Global Compact on Learning Donor Network, April 7.

OECD (Organization for Economic Cooperation and Development). 2011. *Strong Performers and Successful Reformers in Education: Lessons from PISA for the United States.* Paris: OECD. http://www.oecd.org/pisa/46623978.pdf.

SACMEQ (Southern and Eastern Africa Consortium for Monitoring Educational Quality). 2016. "SACMEQ III Reading and Math Achievement scores for Zambia." http://www.sacmeq.org/?q=sacmeq-iii-reading-and-math-achievement-scores-zambia.

Stigler, James W., and James Hiebert. 1999. *The Teaching Gap: Best Ideas from the World's Teachers for Improving Education in the Classroom.* New York: Free Press.

UNESCO. 2012. "Zambia EFA Profile." http://www.unesco.org/new/fileadmin/MULTIMEDIA/FIELD/Dakar/pdf/ZambiaEFAprofileoct2012.pdf.

———. 2014. "Zambia EFA Profile." http://www.unesco.org/new/fileadmin/MULTIMEDIA/FIELD/Dakar/pdf/FicheEPTZambia.pdf.

Endnote

1. The SACMEQ survey began in 1995, when ministries of education across Africa joined together to share research and data with the help of the International Institute for Educational Planning. SACMEQ II (2000) included 14 ministries of education, and SACMEQ III (2007) increased this number to 15 ministries.

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