

Republic of Zambia
Ministry of Education

Process Analysis on “Capacity Development through the School-Based Continuing Professional Development Projects in Zambia”

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JAPAN INTERNATIONAL COOPERATION AGENCY

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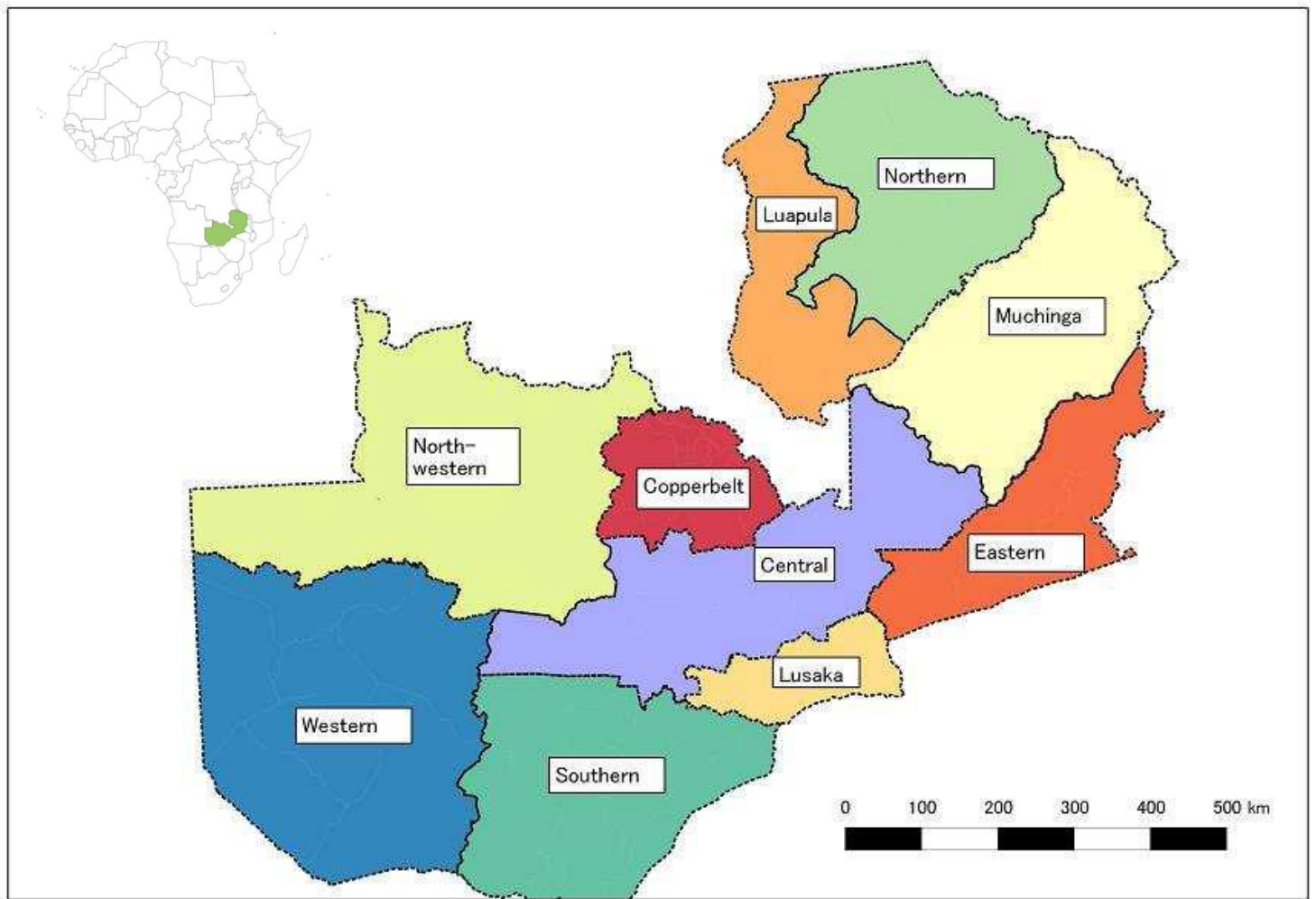


Fig. 1 Map of Zambia

Chapter 1: Why the Perspective of Capacity Development Is Needed Now

Background of the study

Capacity Development (hereafter referred to as ‘CD’) is not a new concept, having emerged in the late 1990s as an important driver for sustainable development. Although its theory is being elucidated and good practices accumulated, many projects have yet to adopt CD-type support¹. In addition, over the past two decades, the development world has seen the emergence of a diverse range of non-Official Development Assistance (ODA) actors, including non-Development Assistance Committee (DAC) countries, impact investors, philanthropic organisations and private companies, each with their own ideas and resources but not necessarily with being familiar with the concept of CD. For developing countries that are becoming increasingly dependent on non-ODA, the importance of sustainable development played by CD assistance is an issue to be reconsidered. In addition, the importance of CD is being reaffirmed as a Sustainable Development Goal (SDG; Goal 17: Partnerships for Goals) by 2030, advocating the necessity for effective and focused CD assistance in developing countries to achieve national plans for the SDGs.

In the 2000s, the Japanese International Cooperation Agency (hereafter referred to as ‘JICA’) also advocated CD assistance that emphasised recipient country ownership, mainly in technical cooperation projects, and several studies related to CD were conducted. However, most of these were conducted from the perspective of development partners, and the interpretations of recipient countries have not been fully explored. A similar study, ‘Analysis from a Capacity Development Perspective Strengthening of Mathematics and Science Education (hereafter referred to as ‘SMASSE’) Project in Kenya’ (2007) has been conducted by the JICA; however, it does not elucidate the CD process through the fleeing of counterparts, lecturers and individual teachers by participating in projects, and why some individuals who experienced the same activities may or may not promote CD. Furthermore, the study was conducted during the implementation of projects, which does not allow to verify the advantages of CD support, such as nurturing sustainability, and the associated impacts requiring a medium- to long-term perspective. In particular, since projects’ contribution to learners’ achievement requires a long-term perspective, how the behaviour change of counterparts, lecturers and teachers through CD contributed or could contribute to the improvement of learners’ achievement has not been identified.

¹ Heinz Greijn, Volker Hauck, Anthony Land and Jan Ubels (2015) Capacity development beyond aid, SNV Netherlands Development Organisation and European Centre for Development Policy

Research and case study analysis on CD in JICA

The question "Does aid work?" was actively debated in the 1990s after the end of the Cold War. It was also argued that donor-led aid which deprived the local community of initiative and focused only on individual capacity and building organisations undermined the sustainability. While cooperation based on a budget separate from the developing country system distorted the policies of the partner country and different administrative and procurement procedures for each donor increased administrative costs for the developing country. As a result, it undermined the capacity of the donor side. These criticisms led to the need to reassess the experience and comparative advantages of JICA's project-based technical cooperation, and a number of surveys and case studies on CD were conducted from around 2005.

JICA defines CD as "the process of improving the capacity of developing countries to cope with challenges as an aggregate of multiple levels, including individual, organisational and social". In order to clearly understand the characteristics of the CD approach, it is necessary to recognise the differences between Capacity Building (CB) and the CD approach, which is commonly used. The differences between the two can be summarised in the following three points.

1. Whereas CB mainly targets capacity building of organisations or individuals, CD is a comprehensive concept that also includes institutional and political development and improvement of social systems. (See CD's comprehensive perspective).
2. While CB is a term referring to interventions that build capacity from the outside, CD is a term referring to the intrinsic process itself by developing countries themselves. (See CD's intrinsic perspective).
3. While CB looks only at the stage of building capacity, CD emphasises that it is an ongoing process of building, strengthening and maintaining capacity.

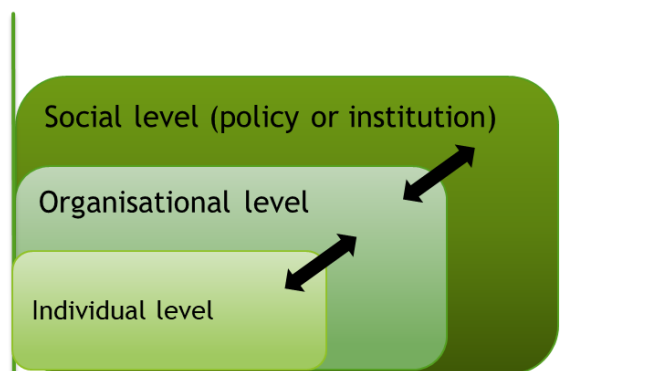


Fig. 2 CD's comprehensive perspective

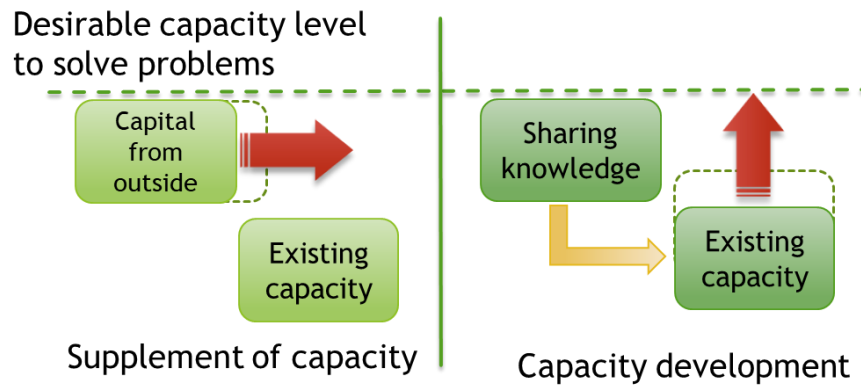


Fig.3 CD's intrinsic perspective

Purpose of the study

The first Lesson Study project in Zambia – the subject of this study – was formulated at a time when the above CD had drawn national and international attention. Then the JICA subsequently implemented technical cooperation projects in phases over a period of about 15 years from 2005 to 2019. This study focuses on the CD process and tries to understand it from the perspective of counterparts involved in the projects, examining how individuals have grown through 15 years of support for in-service teacher training based on the CD concept. The study also examines the effectiveness of CD support through narratives from Zambian people, namely how individual growth has influenced organisational and social transformation and, as a result, whether their capacity to contribute to the improvement of pupil's learning in Zambia in the future has been strengthened or not. Furthermore, based on the reality of the CD identified, this study determines how CD has contributed or may contribute to the improvement of children's' leaning in Zambia. As mentioned earlier, CD is not a new concept; however, the study proposes that the advantages of Japanese technical cooperation and lessons learnt through the Lesson Study projects in Zambia be fed back to future projects with the CD concept in response to the demands of the new era.

In line with the above objectives, the following 'key questions' and 'research framework' were developed.

Key Question:

How has CD support made it possible to influence individual, organisational and social change and contribute to the improvement of children's learning?

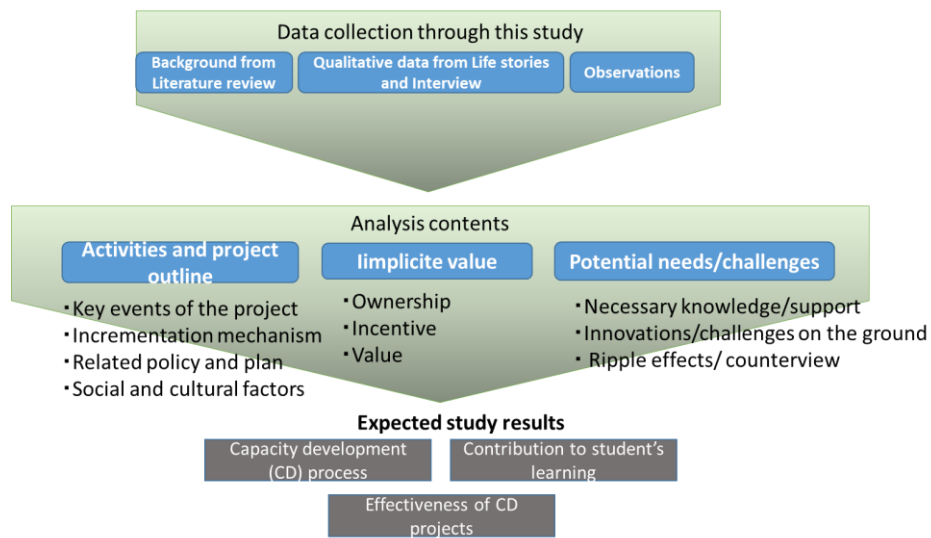


Fig.4 Research framework

Method of the Study

To emphasise the identification of CD's process and effectiveness from the counterpart's point of view, the survey applied a simplified version of project ethnography, an approach to process analysis that has the characteristics of ethnography, such as 'learning from the perspective of the people involved'. The interview survey focused on the list of key stakeholders provided by the experts in advance, but the number of interviewees was increased with snowball sampling. Interviews were divided into general information gathering and life story interviews depending on the intensity of the stakeholders' involvement in the project.

Life story interviews were adopted because they would allow to obtain an overall picture of CD support from the people's narratives (stories) on turning points, key events and steps in their relatively long involvement with the projects. Therefore, the interviews adopted unstructured open questions; specifically, they asked the question 'I would like you to tell us your oldest memories of the project or Lesson Study'. Then, the interviewees were asked to comprehensively describe their personal CD experiences along the project's timeline. The life story interviews showed that Zambians were eloquent and vividly remembered many things – whether because of their original culture of folklore or because people who can tell a story (such as preaching in church) are considered competent and tend to be appointed to ministerial posts or administrative positions in schools. Compared to Japanese interviewees, with whom we exchanged questions and answers, Zambians could recall many anecdotes with examples without being asked questions.

Interviews in the field survey were recorded with permission. Transcripts in English were

prepared by a local research assistant. During the field survey, interviewees and questions for the next interviews were determined by reading house transcripts. It was also effective to ask native Zambians to prepare the transcripts because they included Zambian local English expressions, intonations, proper nouns (e.g. local address and school names) and local languages. The transcripts were rechecked while listening to the recordings and revised by the researcher. The interviewees' real names were used to make the scene alive, and the final report was sent to the interviewees to confirm what they had said and obtain their approval for inclusion in the final report.

For the field observation, the National Science Centre (hereinafter referred as 'NSC') of the Ministry of Education prepared our office in its building, where we observed and documented the daily work and meetings of relevant officials by capturing images and recording them. In addition, the Third-Country Training Programme (Knowledge Co-creation Programme (hereafter referred to as 'KCCP')) conducted by Zambia was observed by obtaining image data of the training programmes. Lesson Study and workshops during school visits were also observed and documented by video recording.

Target of the study

Three provinces (out of 10) were selected to determine the variations in the effects of the project's different phases: Central Province, where the schools for Phases 1–3 and the teacher's college for Phase 4 are located; Lusaka, where the schools for Phase 3 (phase of expansion) are located; and Southern Province, where the schools for Phase 3 and teacher college for Phase 4 are located. The interviewees included the Ministry of Education (NSC, Teacher Education and Specialised Service (hereinafter referred as 'TESS'), Examinations Council of Zambia and Teaching Council of Zambia); provincial and district education officers; principals, teachers and pupils in primary, secondary and Science, Technology, Engineering and Mathematic (hereinafter referred as 'STEM²') schools and teacher's colleges; donors (VVOB, World Bank); a Japanese expert (Dr Nakai); and the JICA (an adviser, a former Zambia office director, a planning and research staff, and a local staff), totalling 140 people.

As mentioned in the methods section, life story interviews were used with those interviewees who were deeply involved in the project and who could talk about their own personal growth

² STEM is an educational model that began in the U.S. in the 2000s and is adapted to a wide range of stages from primary to higher education.

through the project activities. Life story interviews were conducted multiple times (at least twice) with the following eight Zambian stakeholders to elicit their project-related narratives.

Tab.1 Participants of the life story interview

Name	Age • Gender	Affiliate	Background
Tindi	70s – Male	Ex-Principal Education Officer, In-service, TESS (Counterpart)	As a counterpart from the Ministry of Education (MoE), Mr Tindi was involved in the project's formation, the introduction of Lesson Study and its nationwide rollout. After retiring from the MoE, he was part of the project's local staff and an adviser to the NSC, leading the kyouzai-kenkyu, STEM education and KCCP.
Banda	50s – Male	Director, NSC (Counterpart)	After working as a secondary school science teacher, he was assigned to the Education Office in the Central Province at the start of the project and was instrumental in launching the project's Phase 1. He was later appointed director of the NSC in MoE, where he coordinated all the project activities.
Mubanga	60s – Female	Ex-Director, TESS (Counterpart)	After serving as Principal of the Kwame Nkrumah Teacher College in the Central Province, she became Director of TESS in the MoE, the project implementing agency, from Phase 2. As Director of the TESS, she especially contributed to the nationwide dissemination and institutionalisation of Lesson Study.
Kazeze	50s – Female	Training officer, NCS (Counterpart)	She was promoted from secondary school science teacher to Provincial Resource Centre Coordinator (PRCC) and was involved in the introduction of Lesson Study in the Central Province. Later, she was appointed as a member of the National Team and contributed to nationwide dissemination and development of kyouzai-kenkyu at the NSC.
Kasonde	50s – Female	Head, Kalanga secondary school (Central province)	From the beginning of the project, she led activities in the Central Province as a facilitator of Lesson Study and has been involved in I dissemination by compiling its survey results into papers and presenting them at academic conferences.
Kapumpa	40s – Female	Deputy head, Mwayasunka Secondary School (Central Province)	She has been a main facilitator since the introduction of Lesson Study in the Central Province. In recognition of her activities, she was promoted from teacher to deputy head. Her school became a model of Lesson Study and a venue of the KCCP.
Phiri	30s – Male	Lecturer, Malcolm Moffat College of Education (Central Province)	A former high school teacher in the Copperbelt Province targeted in the project's Phase 2, he worked as a facilitator to disseminate Lesson Study in the region. His experience in it allowed him to be a lecturer (physics) at the Malcolm Moffat College of Education targeted for the project's Phase 4. He has established a 'science club' with students at the Collage to implement Lesson Study.
Muzona	40s – Female	Coordinator, Provincial Resource Centre (Lusaka Province)	After working as an elementary school teacher, she became PRCC in Lusaka Province and has been disseminating Lesson Study. She presented related research at the World Association for Lesson Study and was awarded an honorary doctorate from a British university that showed interest in her paper.

Limitation of the study

Unlike the usual report compilation, simplified project ethnography picks up the subject matter from the narratives of the people involved and reconstructs the story. This gives the reader a sense of realism, as if they were simulating the scene, which makes it more convincing and easier to accept the story. However, to get there, detailed descriptions of the research, a deep understanding of the subject matter, experience with the method and a good sense of writing are required. The author's experience and skill with the method, as well as the time limit, the characteristics of the original project ethnography could not be fully exploited. A further issue with life story interviews,

which rely on the memories of the people involved, is that there are many discrepancies between individual narratives and between the narratives and the literature. The time also taken to check these was not allowed sufficient time for interpretation of the narratives or for the organisation of the report.

Most of the interviewees had a favourable opinion on the project. This is assumed to be the result of the interviewees being ‘people who are deeply involved in the project’, and further interviewees were introduced (snowball sampling) by those people. Although, the initial opposition of stakeholders to the project and their responses as some expressed opinions regarding the project’s challenges, as well as comments and suggestions for the JICA’s policies, none of them had a negative view of the project. Some people may have had a negative view of Lesson Study. Therefore, the study was limited to analysing the narratives of people whose behaviour had been changed by this CD project.

Outline of the target projects

In 1996, the Zambian Ministry of Education (hereafter referred to as ‘MoE’) issued the education policy ‘Educating Our Future’, which positioned the ‘continuous professional development’ (hereafter referred to as ‘CPD’³) of teachers as a priority strategy to decentralise education, expand access and ensure equity, and improve the quality of education. In line with this education policy, the ‘School Programme of In-service for the Term’ (hereafter referred to as ‘SPRINT’) framework was developed to introduce and institutionalise school-based CPD.

The JICA has implemented the ‘Strengthening of Mathematics and Science in Secondary Education’ in Kenya (hereafter referred to as ‘Kenya SMASSE’) since 1998, and technical exchange and training were being conducted in Kenya SMASSE to spread the project’s concepts to other African countries with similar problems of stagnant maths and science education. Subsequently, a planning researcher dispatched to the JICA Zambia office in 2003 and counterparts from the MoE who had participated in training programmes in Kenya SMASSE formulated the project’s framework in Zambia. Based on this, in 2005, the technical cooperation project ‘Strengthening Mathematics, Science and Technology Education’ (SMASTE; hereafter referred to as ‘Phase 1’) was launched by the MoE Zambia and JICA. The project targeted lower

³ CPD is a broad concept that includes ongoing training and self-development activities to maintain and improve the skills and qualifications of professionals requiring specialised skills. People in the education sector describe lesson study and in-school training as CPD.

and upper secondary (Grades 8–12) in science⁴ and was implemented for 2 years in the Central Province. It showed improvements in learning activities and confirmed unexpected impacts, including the expansion of Lesson Study activities beyond the targeted subjects and grades. In response, several technical cooperation projects were subsequently implemented. First, in 2008, the ‘SMASTE School-Based Continuing Professional Development Project Phase II’ (hereafter referred to as ‘Phase 2’) was launched to introduce Lesson Study in subjects other than science and in primary education in the Central Province. Lesson Study was also introduced in science subjects of the lower and upper secondary schools in the two new target provinces (Copperbelt and Northwestern). Furthermore, based on these results, the Zambian government developed the ‘Master Plan for Enhancing Teacher Professional Growth through School-Based Continuing Professional Development’ (2010), which aimed for the nationwide rollout of Lesson Study. Then, the ‘Project for Strengthening Teachers’ Performance and Skills’ (STEPS; hereafter referred to as ‘Phase 3’) started in 2011, covering all 10 provinces in Zambia by adding the seven newly targeted provinces. Subsequently, in line with the above Master Plan, the ‘Improvement of Pedagogical Content Knowledge (IPeCK): Linking Pre-service and In-service Education’ (hereafter referred to as ‘Phase 4’) was implemented from 2016 to 2019, aiming to strengthen the capacity of teacher training colleges, improve the quality of training programmes and ensure the quality of Lesson Study.

Tab. 2 Contents, target provinces, grade and subject of each project phase

Period	Project	Contents	Province	Grade	Subject
2005–2007	Strengthening Mathematics, Science and Technology Education (SMASTE)	-Introduction of Lesson Study -Formation of implementation methods	Central Province	Lower and Upper secondary	Science
2008–2011	SMASTE School-Based Continuing Professional Development Project Phase II	-Implementation and expansion of Lesson Study -Establishment of a training system -Introduction of problem-solving and learner-centred approach	Central Province	Primary, Lower and Upper secondary	All subjects
			Copperbelt and Northwestern Provinces	Lower and Upper secondary	Science
2011–2015	Project for Strengthening Teachers’ Performance and Skills (STEPS)	-Nationwide dissemination of Lesson Study -Promote <i>kyouzai-kenkyu</i>	54 districts in Zambia	Lower and Upper secondary	Maths and Science
2016–2019	Improvement of Pedagogical Content Knowledge (IPeCK): Linking Pre-service and In-service Education	-Introduce Lesson Study to teacher training schools -Formation of model for collaboration between teacher’s collages and affiliated primary and secondary schools -Strengthen <i>kyouzai-kenkyu</i> and pedagogical content knowledge (PCK)	Central, Copperbelt and Southern Provinces	Teachers’ education (pre-service)	Maths and Science

⁴ Integrated Science was targeted in lower secondary. Science, Biology, Chemistry, Physics and Agricultural Science were targeted in upper secondary.

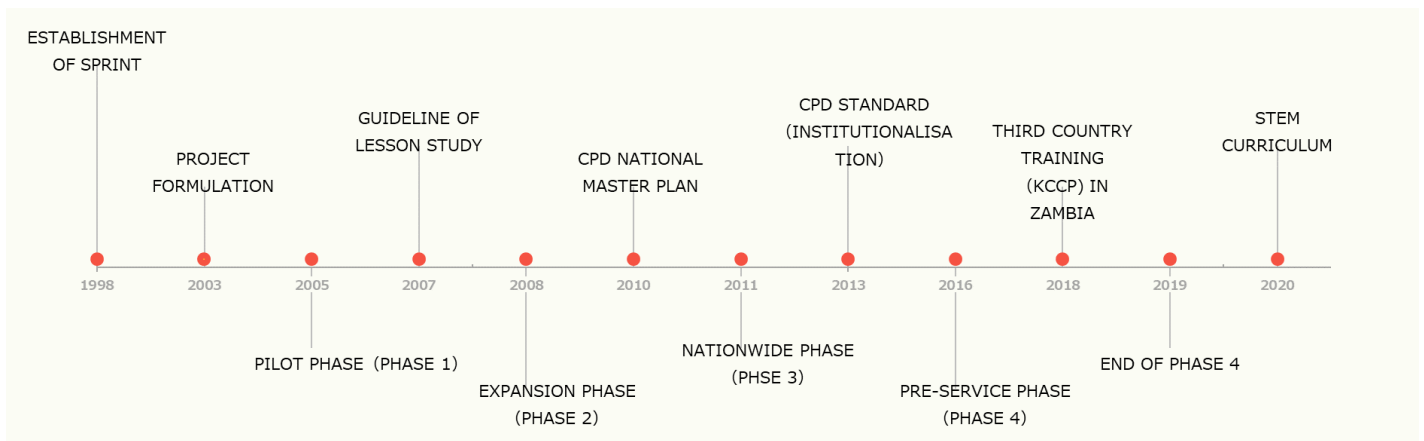


Fig 5. Timeline of key events

Project implementation structure

The projects adopt the existing in-service teacher education system of the MoE in Zambia, and SPRINT was implemented by TESS and its unit (NSC) in MoE together with the Provincial Education Offices, District Education Offices and Provincial and District Resource Centres as the main counterparts. In SPRINT, Provincial Education Support Teams (PEST) and District Education Support Teams (DEST) were organised in the provinces and district to support the implementation of Lesson Study in each school. They are headed by Provincial and District Education Officers and consist of Education Standards Officers, Teacher Education Standards Officers, Resource Centre Coordinators and representatives of teachers' colleges. The National Education Support Team (NEST), led by NSC staff, is organised at the national level to compile monitoring reports from PEST and DEST, provide technical support at the national level and share information.

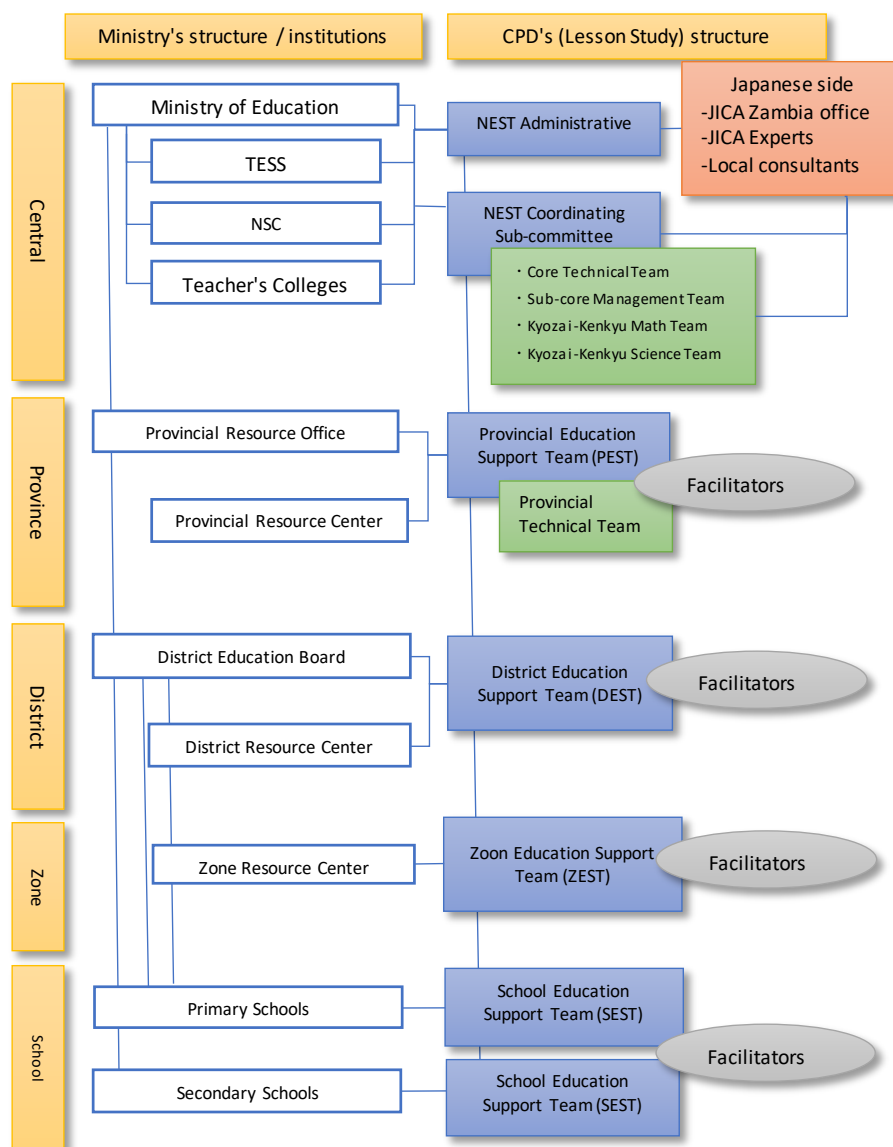


Fig 6. Implementation structure

Lesson Study in Zambia

Lesson Study is a method that incorporates the principles of '*kyouzai-kenkyu*' (Plan), 'Demo lesson' (Do) and 'Review' (See), which have been formed in the Japanese educational culture of planning with fellow teachers, conducting lessons, discussing lessons and applying the results to the next *kyouzai-kenkyu*. This cycle is repeated as necessary to improve lessons in the classroom. In Zambia, this cycle is repeated twice, as shown in the figure below, and eight steps are adopted: (1) setting the theme, (2) preparation of the lesson through collaborative work, (3) implementation and observation of demo lesson, (4) review by the observers, (5) preparation of lesson plans based

on reflections, (6) re-implementation and observation of the demo lesson, (7) review by the observers and (8) summary and recording of learning.

As mentioned above, Lesson Study introduced in the project is a framework for improving lessons through a Plan-Do-See cycle, which is essentially different from 'learner-centred approach'. However in Zambia, many people especially teachers at the field level, regard Lesson Study as learner-centred lessons. This may be due to the fact that learner-centred was introduced with reference to learner-centred teaching in SMASSE, Kenya (ASEI-PDSI⁵). On the other hand, teachers' understanding of its concept remains superficial due to the misconception that as long as practical lessons and experiments are introduced in the classes, the lessons are learner-centred. Therefore, the project emphasises the importance of 'kyouzai-kenkyu' (Plan), which involves identifying the essence of the teaching materials through review, selection and analysis and then by conceiving lessons that match the learners' actual understanding and reflect it in lesson plans. Furthermore, to deepen kyouzai-kenkyu, the acquisition of knowledge that links pedagogy and the contents of each unit (PCK) is stressed.



Fig7. Lesson Study cycle in Zambia

⁵ ASEI-PDSI aims to develop and to implement the lesson practices that SMASSE Kenya had created such as Activity (activity-based knowledge acquisition), Student (from teacher-centered to student-centered), Experiment (from lecture-based to experiments and practical lessons), and Improvisation (experiments using familiar teaching materials) by using the methodology of Plan (lesson planning), Do (teaching), See (evaluation), and Improvement in order to transform the lessons.

Contents of the report

Chapters 2 to 5 summarise the personal narratives from the life story interviews to the people concerned with the researcher's interpretation. Chapter 2 describes the past support in the Zambian education sector, the project formation by the JICA Zambia office and the stages leading to the dispatch of Japanese experts; Chapter 3 depicts the process from the start of the Lesson Study project to its national roll-out, the institutionalisation of Lessons Study and the strengthening of counterpart organisations; Chapter 4 describes the adaptation Lesson Study to teacher's colleges, the STEM education and the contribution to other African countries through third country training; Chapter 5 states the educational challenges in Zambia and the contribution to pupil's learning through Lesson Study. On the other hand, Chapter 6, from the perspective of the researcher as an outsider, considers the characteristics of JICA's CD cooperation in line with the research questions, the potential for improving pupil's learning as a conclusion, and provides lessons for other similar projects.

Chapter 2: Designing Our Own Project

Encounter with Lesson Study

Mr Tindi began his education career as a secondary school science teacher before being assigned to the TESS in MoE in 1997. Since 2002, he has been the Head of the In-service Teacher Training in the TESS and has been involved in the project's formation and the introduction and rollout of Lesson Study. After his retirement from the MoE in 2010 during Phase 2, he continued to lead all the project activities as a project local staff and adviser to the NSC, including *kyouzai-kenkyu*, STEM education and third-country training. In addition, he was a key player in SMASE Africa for many years, serving as the President of SMASE Africa⁶ from 2006 until 2015, when he took over from the Kenyan counterpart.

Mr Tindi lived in Southern Rhodesia, now Zimbabwe, but returned to his parents' homeland, Zambia, in 1964, when Northern Rhodesia was independent. His father was involved in railroad construction in Livingstone, Southern Province, and he spent his childhood there. He received a scholarship to from a mining company in Copperbelt to attend the University of Zambia, where he studied physics. To repay the scholarship, he had to work in the mines in Copperbelt for 3 years after graduation. At the time, he says working in a mine in Zambia was a near-death experience:

At the time, most of parents in Zambia were strongly opposed to their children working in the army and in mines. So working in the mines was dangerous. In 1970, a major accident occurred in a mine in Zambia, and as many as 89 people were killed when a mudslide entered the mine. The occupational safety was then called for, but before that, work in the mines was a death trap, as human life was treated lightly.

After completing his work at the mine, Mr Tindi took up teaching science at a secondary school in Luapula Province, while also being actively involved in a national organisation called the Zambian Association of Science Teachers (hereafter referred to as 'ZASE'), which is run by volunteer teachers in Zambia. Many Japan Overseas Cooperation Volunteers (hereafter referred to as 'JOCV') – maths and science teachers from Japan – were dispatched to the schools of the teachers of this association. There, Zambian teachers and JOCV observed each lesson and pointed out areas of improvement. Looking back on this activity, Mr Tindi found it curious that a JOCV from Japan, who was not a good English speaker, was able to easily capture the pupils' attention.

⁶ The renamed name of Strengthening of Mathematics and Science Education in Western, Eastern, Central and Southern Africa (SMASE-WECSA), which was initiated at SMASSE in Kenya.

This was his first informal encounter with ‘Lesson Study’, which he had not heard of at that time.



Mr Tindi (Ex-head of in-service division of TESS)

Lack of teachers in maths and science

After teaching science in the Luapula, Western and Southern Province, Mr Tindi worked as a lecturer at a teachers’ college, and in the early 1990s, he was assigned to the TESS in the MoE, which later became the implementing agency for Lesson Study projects. During this period, the lack of secondary schools to respond to the rapid increase of primary school enrolment under the ‘Education for All’ initiatives was an issue. Therefore, a programme⁷ was underway to improve secondary school enrolment by adding lower-secondary school grades (Grades 8 and 9) to the existing primary schools (Grades 1–7) as basic schools (Grades 1–9). Nevertheless, while this initiative improved access to lower-secondary level, it created new issues affecting the quality of education – in particular, the shortage of qualified maths and science teachers in lower-secondary education. The NSC was established under the TESS for in-service training in maths and science at the lower-secondary level. Mr Tindi describes the challenges of this policy as follows:

Where in Grade 8 and 9 nine were in junior secondary schools. Now, these Grades were integrated in basic schools (Grade 1–9), and therefore, the teachers that were teaching mathematics and science in primary schools which had been turned into basic schools were untrained teachers to

⁷ This program, called the ‘Support to Basic Education Sub-sector Investment Program (SBESIP)’, was designed to ensure access to basic education until Grade 9 by unifying the primary and lower secondary and upgrading them as basic schools (Grades 1 to 9).

teach science in both Grade 8 and 9 in their schools. Hence, for some of courses which were being done at Chalimbana Teacher Training College that primary school teachers would be taking some kind of in-service training. The current NSC was established as an organisation of the Ministry of Education with the support of UNDP and UNESCO to train teachers of mathematics and science for that course. However, challenges became clear that the Diploma Course required in-service teachers to leave school for three to six months and attend university, increasing the burden on the few remaining mathematics and science teachers.

Launching SPRINT

At the same time that Mr Tindi was assigned to the MoE, the Action to Improve English, Mathematics and Science (AIEMS) project⁸ was launched by the UK Department for International Development (DFID). It included the development of teaching materials and teacher training to improve English, mathematics and science skills in primary and secondary schools. Around the same time, the MoE underwent a reorganisation, and the Teacher Education Bureau established the pre-service and in-service divisions, as seen in the current organisation. Mr Tindi was responsible for the science component of the AIEMS project, which established facilities called ‘Teacher Resource Centres’ in the provinces and counties to serve as local training centres.

Mr Tindi suggests that the AIEMS project brought important infrastructure and systems for in-service teacher training, but the training system did not adapt to the educational situation in Zambia, making sustainability a challenge.

The project worked temporarily and had an effect on the quality of education, but as soon as the UK support ended, the budget ran out and teachers lost their means of access to the Provincial and District Resource Centres and were unable to receive training. In Zambia, where the country is large and schools are scattered, this kind of central government-led training system at the provincial and district levels proved to be unsustainable.

The MoE compiled the experiences of these donor in-service teacher training projects in the education policy ‘Educating Our Future’ issued in 1996 and started to prepare a new programme. To establish this policy, Mr Tindi and colleagues conducted a field survey, and based on the results, they announced ‘SPRINT’ as the in-service teacher training programme of the MoE. In SPRINT, the training that took place at Province and District Resource Centres was converted to in-school training based on reflections from previous projects. Teachers no longer had to travel to the

⁸ The project was implemented from 1994 to 2000. Fourteen Provincial Resource Centres and 63 District Resource Centres were established nationwide, and Resource Centre Coordinators were assigned to each centre.

Province and District Resource Centres (many of which are located in the provincial capitals), and the school-based training system was established to allow them to develop their skills at their schools. Although Mr Tindi took a lead in setting up SPRINT, the national budget crunch caused by the drop in copper prices in the 1990s led to the International Monetary Fund's (IMF) reorganisation of the ministries, and consequently, many team members were deployed elsewhere within MoE. Thinking of them, Mr Tindi says he still feels proud when people ask him if SPRINT was created by his team.

SPRINT introduced teacher group meetings aiming at bringing teachers together within schools to discuss their own issues. However, while some of the issues discussed at the meetings were related to improving teaching, others were about improving teacher compensation or donor-supported initiatives, and many schools did not see the value in continuing SPRINT activities. Mr Tindi was considering using this system to provide teachers' training through university lecturers to address the lack of contents and pedagogical knowledge, which was an issue many teachers were facing at the time. At that time, the 'Strengthening of Mathematics and Science Education in Western, Eastern, Central and Southern Africa' (SMASE-WECSA⁹) based on Kenya SMASSE was launched with the support of the JICA and involving neighbouring countries, including Zambia. It promoted technical exchanges and training programmes for maths and science education and the establishment of teacher training systems.

Participation of Dr Banda

Dr Banda, the current director of the NSC, has been a counterpart along with Mr Tindi since the beginning of the Lesson Study project. After working as a secondary school science teacher, he was assigned to the Provincial Education Office in the Central Province and devoted himself to launching Phase 1. After the project's nationwide rollout during Phase 3, he became the Head of the NSC under the MoE as a main counterpart in the whole project.

Mr Tindi said that Zambia has a favourable condition in terms of the provision of maths and science teacher resources to promote the projects because of the existing Zambian teachers' groups called 'Zambian Association of Science Education (ZASE)' and 'Zambian Association of Mathematics Education (ZAME)'. Dr Banda was a science teacher at Chipembi Girls Secondary School in Central Province and a member of the ZASE, energetically working to improve the quality of teaching. He graduated from the University of Zambia with a Bachelor of Education,

⁹ The first SMASE-WECSA was initiated in 2001, and Zambia has been an early member country since 2002.

but like many other students in the Faculty of Education, teaching was not his first choice. Dr Banda said that ‘at that time, teaching was not something people could value. They would talk about it negatively’; nevertheless, he chose teaching because of the influence from his primary and secondary teachers and university lecturers. He noted the potential of teachers to nurture human resources to develop his country as follows:

So I learnt from them what they were doing, how they were doing it. For example, chemistry was taught by Mr Obita and analytical chemistry by Mr Kilemile, and they were all Ugandans. I think they did a lot to make chemistry look really simple, over attractive and things like that. When I look at all these, I think that there are certain things in them which made me realise that there is something a teacher can do.

In 2003, when he was a teacher, Dr Banda was recommended for training in Japan by a JOCV mathematics teacher working in Chipembi Girls’ Secondary School and participated in an 8-month training programme at the Tochigi Prefectural Board of Education under the Overseas Technical Trainee Programme implemented by each prefecture with the JICA’s support. Subsequently, in recognition of his achievements as a teacher, involvement in the ZASE, and experience studying in Japan, he was appointed as standard officer in science at the Provincial Education Office, Central Province, at the start of Phase 1, after returning from Japan in March 2004. Dr Banda expressed his participation in the project ‘Although I didn’t have enough time to implement my Japanese experience in my classroom after returning, it gave me the opportunity to use it in broader setting than that of in a school as the standard officer in the Provincial Education Office.’



Dr Banda (Director of NSC)

Plan the project for Zambia

Mr Tindi was assigned by the MoE to write project documents for the JICA Technical Cooperation Project. To formulate the project, Dr Suzuki, who had completed a PhD in Educational Development in the UK and had experience in international organisations and affluent expertise in the education sector, was sent to the JICA Zambia office in 2004 as a planning researcher. Dr Chileshe, former Dean of the Faculty of Education at the University of Zambia, was also hired as a local expert in charge of education at the JICA Zambia office. The project was formed by these two specialists: Mr Tindi, from the MoE assigned for the project formulation, and Dr Banda, who just returned from training in Japan.

At that time, the approaches used in Kenya SMASSE to improve teacher quality, such as ‘cascade training¹⁰’ and the ‘learner-centred model’ (ASEI-PDSI) were disseminated to other African countries. Even before the formation of the Lesson Study project, many Zambians had participated in exchanges and training sessions at Kenya SMASSE. While the Zambian participants who looked at Kenya SMASSE had positive impressions and wished to do the same in Zambia, Mr Tindi and Dr Banda believed that cascade-type training was not appropriate for Zambia, and they wanted to consider other methods. Dr Banda stated that it is difficult to generate synergy effects of learning between trainers and participants in cascade-type training. Signage learning with a teacher–child relationship is also stressed in Lesson Study, which suggests that the project’s content has influenced this opinion.

I don't believe in TOTs. I don't believe in that. This is the British Hierarchical Master Touch and doesn't bring you to the collegiality approach, it's like a cascade. When you tell me about the training of trainers, you are saying I'm more knowledgeable than you, which is wrong because it does not make the one of the ordinary trainers better than trainers. I like to show my seniority, and I like to maintain it. The trainers could have certain vantages, but when we put ours together, we can make it better. That's my belief.

In Zambia, much of teacher training had been provided using the cascade model; however, with this type of training, in which the contents are transmitted from the central institutions to teachers in the field, teachers lose the means of access to the training sites when donor support ends. In addition, at that time, teachers had a high mortality rate due to HIV, and many were leaving their

¹⁰ It is a training method in which the central trainer conveys the training contents to the regional trainers and the regional trainers to the teachers, just like water flowing from top to bottom in cascade. The advantage of cascade training is that it makes it possible to provide training to many participants at a relatively low cost (Kubota 2021).

jobs due to migration or returning to college. With the cascade transitory training had been a challenge in that the training content has been diluted in the field, the MoE summarised these issues in 'Educating Our Future', published in 1996, and recommended that in-service training programmes (1) be demand driven, responding to identified needs; (2) focus on school needs and based in schools themselves or Resource Centres; (3) consider cascade models that avoid too much dilution at the base; (4) be cost-effective, reaching large numbers for a relatively small outlay, and be given high priority; and (5) include training in the distribution of materials to schools, the introduction of new subject contents and substantial changes in management and organisational features.

Complementing the shortcomings of cascade training, the MoE adopted the cluster approach¹¹ to SPRINT, which is conducted either within a school or at the neighbouring-school level. The head of Chibombo Boarding Secondary School suggested that cluster training is more effective in terms of cost-effectiveness and sustainability as it can be customised at the field level according to the training needs varying by each school, subject and grade level; moreover, it ensures teachers' willingness to participate. On the other hand, because the cluster training is conducted among a limited number of stakeholders within a school or neighbourhood school, it is prone to inertia, and the regular input from outside instructors and extensive training using Provincial and District Resources Centres is important for its revitalisation.

The situation of teachers varies from place to place, so the situation at Chibombo Boarding Secondary may not be the same as the needs of neighbouring schools. The cluster approach, where we do the training ourselves, allows us to address our own issues more effectively than by outside trainers. It is much more effective to solve our own problems than to wait for someone who does not understand our situation. However, as training is school-based, we know each other too well, and sometimes the training lacks seriousness. At such times, bringing in someone from the outside, such as lecturers from another country, can deepen learning. But other than that, I feel that it is a very appropriate approach and can address many issues locally.

JICA planning researcher, Dr Suzuki, often invited Mr Tindi and Dr Banda to her home in Lusaka to discuss the project's direction. The Zambian counterparts initially applied for a project to improve teacher capacity through their own activities of ZASE, but the association with a group of volunteer teachers was not eligible for the JICA project. Therefore, Mr Suzuki turned her

¹¹ Initially, support to establish the cascade training system was common in-service training projects. Since the introduction of lesson study in the Philippines in the late 1990s, an increasing number of projects were conducted to establish or strengthen it through cluster-based training, either school-based or formed by groups of neighboring schools (Matachi/Kikuchi 2015).

attention to SPRINT, which was an existing MoE in-service teacher training programme. SPRINT has several training programmes, one of which included lesson observation, where teachers give demo lessons and exchange opinions. As mentioned above, in-school training through SPRINT had become a skeleton system with implementation differing from school to school, and even when implemented, the content was unrelated to strengthening teachers' abilities. Therefore, the introduction of Lesson Study was considered a way of improving lessons and pupils' learning without much expense by utilising the in-school training framework established in SPRINT. Mr Tindi urged the MoE to reflect the strengthening of SPRINT in the national plan. At the same time, through negotiations at the high-level meeting consisting of partners and the Zambian government led by Mr Suzuki with support of the JICA Zambia office, the Ministry's budget (Education Sector Pool Fund¹²) was decided to be used partly for the project. This minimised the input from the Japanese side with only one Japanese expert, with budget only for the dispatch of the expert and training in the third country. The short-term project of 2 years under the jurisdiction of the JICA Zambia Office rather than under the headquarters, as in a general JICA Technical Cooperation Project, was formed.

Reflecting on those days, Dr Banda describes his desire to apply SPRINT to form the project unique to Zambia, distinct from the Kenyan SMASSE. He suggests that the process was full of trial and error as Lesson Study that applies the 'plan-do-see' process.

I was also attending SMASE Africa meeting from 2002 up to today. I had been going there. I was seeing what other African countries were doing. I saw what Japan was doing for Kenya. Inspiration came on me again to say I think we needed to have something which will help Zambia come on the map. I did notice that there were certain things we are doing well, but we are not showcasing to other people.

So those are the issues I look at. For me, I'm also thinking in the process of this journey. I've been – I should say I have been – in this lesson' I'm the one behind this Lesson Study. I remember the first draft of Lesson Study what we're going was developed from zero. I was given an assignment by Dr Nakai, I was writing it in Kenya.

The project expert, Dr Nakai, described the formative stage of the Zambian Lesson Study project as follows: 'When I went to Zambia, all the stakes had already been planted, and I just

¹² At the time of project formation, aid modalities were shifted from project support to financial support in Zambia, and under the Sector Wide Approach (SWAp) for donor coordination, the 'Education Sector Pool Fund' was introduced, in which each donor contributed to the fund. It was difficult for donors, including the JICA, to launch individual projects in the field of education. Therefore, supporting SPRINT, the existing Zambian system, using a Pool Fund (Ministry budget) was timely given the aid trends in Zambia at the time.

built a house on top of this foundation’. Dr Banda noted that Dr Suzuki, the planning researcher, with support of the JICA Zambia office, respected the Zambian ownership and took care not to make them expect excessive reliance on the donor as follows:

Dr Suzuki said, ‘Benson, I don’t think you Zambians need money. You don’t need help because you people are lazy.’ Yes, it pained me at that time. But after some time, I realised what she was saying was the truth because we were brought up in the British system, where we think everything should be given to us. There was now another booster. It was a catalyst for my brain to say okay, just told us that ‘we don’t need help’ and I started fighting and said, ‘I think we can do things on our own’. She then helped us plan all the details of the project ourselves.

Starting the project in the Central Province

Kabwe, the capital of the Central Province targeted in Phase 1, is located about 130 km north of the capital, Lusaka. When copper and zinc deposits were discovered in 1902, it was named Broken Hill after an Australian mine until the discovery of even larger deposits in the Copperbelt in the early 1930s. As the largest mine in Zambia, it flourished as a centre of colonial industry. However, the mine closed in the 1980s, and Kabwe’s economy declined. Today, Kabwe is seen one of the most polluted cities in the world due to heavy metals from abandoned mines.¹³

The ministry advised the project formulation team to consider the most neglected province the JICA project sites, which turned out to be Central Province. Until then, many partners had implemented education projects in Lusaka, the capital, or in the Copperbelt, the centre of industry, and after the economic depression, the Central Province had received limited donor support and was literally a neglected province. Furthermore, the Central Province had experienced Lesson Study thanks to a JOCV and Dr Banda, the former chairman of ZASE, as well as a participant of the training in Japan. The TESS in MoE became the project’s implementing agency, and the pilot phase of the Lesson Study project began with the appointment of a task force consisting of Dr Nakai, a Japanese expert; Mr Tindi, an officer of TESS in MoE; and Dr Banda, a science standard officer in the Central Province.

Dispatching a Japanese expert

When recruiting a project expert, Dr Suzuki learnt that Dr Nakai’s assignment as an expert on

¹³ <https://www.ohchr.org/sites/default/files/2022-03/SacrificeZones-userfriendlyversion.pdf>

the Lesson Study project in the Philippines was coming to an end; thus, she met with him in Japan and informed him of the project's objectives. After graduating from university, Dr Nakai worked as a science teacher in a public junior high school in Japan, where he practised Lesson Study, particularly in moral education. After participating in the JOCV, he was involved in the introduction and dissemination of Lesson Study in the Philippines as an expert in the 'Project for Strengthening of Continuing School-Based Training Programme for Elementary and Secondary Science and Mathematics' from 1999. Dr Nakai had just finished his expert assignment in the Philippines at the time. He reminded JICA that he had the intention to introduce the school-based Lesson Study rather than the cascade training used in Kenya SMASSE upon agreeing to be dispatched as a project expert in Zambia. He gave the following reasons for his decision:

From my own experience as a teacher, I know that the skills and knowledge a teacher needs to teach in front of children cannot change with a single training session, so cascade training would not allow me to use the experience I had in the Philippines. Also, when I was a teacher, the most useful part of my teaching experience was from Lesson Study. Based on this, I confirmed with the JICA that it would be fine to deal with Lesson Study instead of the cascade training and then decided to make the contract for the expert.

When Dr Nakai arrived at the Provincial Education Office in Central Province, Dr Banda, who shared the room, showed him the Project Design Matrix (hereinafter referred to as 'PDM') that he had created during the project formation and said, 'We will coordinate the project ourselves, so I want you to teach us the Lesson Study because it is something we cannot do'. Hearing this, Dr Nakai thought that he may be able to do better with them than he had done in the Philippines because they knew exactly what they were doing and were willing to do something on their own. He felt that he might be in an ideal position as a project expert. For the next 15 years, Dr Nakai would be involved in all phases of the Lesson Study project as a project leader.

Observing Lesson Study in the Philippines

After the project started, Mr Tindi and Dr Banda visited the Lesson Study project in the Philippines in which Dr Nakai was involved. In the Philippines, the group of neighbouring schools, called 'cluster', was selected as a venue for the Lesson Study, and each month selected teachers to give demo lessons in front of other teachers in the cluster. Mr Tindi observed the Lesson Study and said, 'Teachers learn a lot in just one day through the process of Lesson Study, and they do not learn just one way, but they can learn further by practicing what they have learnt in their classes'.

The concept of ‘School-based Continuing Professional Development through Lesson Study’ (SB-CPD-LS) was adopted to enable teachers to continuously learn and improve their professional skills within the school by incorporating Lesson Study into the existing in-school training system, SPRINT, which did not function well at that time. Mr Tindi described that the study visit to the Philippines oriented the project’s framework as follows:

In SPRINT, we had been conducting teacher group meetings on a school basis. However, the discussions lacked focus, which made it difficult to continue the meetings, and the teachers did not see benefits in continuing them. When Dr Banda and I saw the Lesson Study in the Philippines, we said to ourselves, ‘This is it, this is what we need in Zambia’. We wanted to enhance the teacher group meetings with Lesson Study. This was the moment we found the concept of school-based continuous professional development through Lesson Study (SBCPD-LS), which we still use today.

Necessary competence for experts

Dr Nakai raised ‘competence for an educator’ as a required element for project experts. He also said, ‘If they perceive a problem as their problem and want to solve it themselves, they will have the initiative to take action. As a supporter, I always want to be there for them, to try together and to help them turn their efforts, even if they fail, into positive experiences. When I think about it, it may be similar to my stance as a classroom teacher at a previous Japanese school.’ He added, ‘The other Japanese experts dispatched for the project had different opinions about the activities, but they agreed on the importance of its Zambian ownership’.

Tolerating trial and error by the Zambian side sometimes leads to project delays; therefore, the modifications had to be made to the PDM as necessary. Dr Nakai’s basic stance as an expert is as follows:

It is not about finishing a project in a certain period of time, but about what the counterparts have been able to achieve through the process of trial and error. JICA officials sometimes expressed concern that depending too much on the counterparts would delay the overall activities, but explained that the project is being implemented with Zambia’s own budget and emphasised their ownership. Then, the JICA staff eventually came to an understanding.

In fact, how was the ‘support with emphasising the counterpart’s trial and error’ demonstrated by Dr Nakai and other Japanese experts accepted by the Zambian counterparts? Ms Mubanga, former Director of TESS in MoE, which was the project’s implementing agency, described the

support provided by the project experts in comparison with that provided by other donors as follows:

What I thought was that the strength of the JICA support was not in the money but in the persons, but I suppose you can have someone. I can also say that both JICA and Dr Nakai are very strong personalities, having Dr Nakai will tell you what it is but in a constructive way, and then he will tell you how he thinks you can do it without forcing his opinion on you. I think that other projects try to transplant another system into Zambian schools that won't work. It's our money to do it. But with the JICA, there was a lot of discussion, adjusting the programme to try and see if it can be adapted to the Zambian scenarios, having the reviews that we would have.

Ms Kasonde, head of a secondary school who participated with Dr Nakai in third-country training and other activities from the beginning of the project and supported him in the field as a facilitator in the Central Province, describes how she improved her abilities through a 'trial-and-error process' provided and supported by the Japanese experts as follows:

I think I picked some of our ways of doing things and also work culture from Dr Nakai – the timekeeping, having a positive attitude towards work, wanting to achieve at the end of the day... you don't stop until you achieve. I learnt from Dr Nakai that you push until you get it. He wasn't telling me this, but I was seeing this when interacting with him. I remember that, in Kenya and Malaysia, he also went with us and trained us on subjective learning. I was part of those 'let's go to this' book, and in subjective learning, he would push me and challenge me use using challenging questions and helping me to come through. We had never experienced such a method of planting a seed and then letting it grow slowly. Just like a garden, we watered until the seeds grew or wilted, and watched carefully. This was the Japanese way of support: what you plant needs the natural environment to take root.

Flexibility for the project management

Looking back on the 15-year project, Dr Nakai states, 'Without this direct project management by the JICA¹⁴, it would not have been possible to develop this level of Lesson Study and *kyouzai-kenkyu*'. This was the first attempt to introduce Lesson Study in Africa; therefore, it was difficult to predict outcomes at the beginning. After trial and error, a Zambian version of Lesson Study and its guidelines were developed, and the ideas of facilitator workshops for teacher training and the

¹⁴ In recent years, the number of 'direct project management by the JICA' in technical cooperation projects has been on the decline, while the number of 'contract project management' in which the JICA makes contract with consulting firms has been increasing. The 'direct project management' is considered more flexible because the implementation budget is not based on a contract with a consulting firm as 'contract project management'.

stakeholder workshops for school administrators were developed all through the project implementation. Furthermore, since the project utilised the existing policy of Zambia, SPRINT, and conducted activities using its own mechanism, human resources and budget, the project's progress was greatly influenced by administration – especially the budget's availability.

Thus, the project's management required flexibility in operating the PDM and the necessity to review PDM activities in each case. However, Dr Banda suggests that if the management of the PDM by experts or the JICA is not flexible enough to involve counterparts and is only used for the donors' unilateral management, it affects the ownership of recipient countries¹⁵.

You see, there are three types of Japanese experts. I'm not just talking about Zambia examples, but for instance, I'm dealing with the JICA on behalf of the whole of Africa. I've seen them in Africa. I've seen them in the Philippines, Malaysia and Indonesia. So I'm talking about this holistic picture I'm able to talk about because I've experienced the three types of Japanese expert who will follow the PDM to the letter and won't bulge. Yes, it has advantages and disadvantages. The advantage is that they are going to fulfil the PDM as it is designed, but the question is whether they will take the people on site. There's another type [of expert] which is not sure where they have seen the problem. They also know what the JICA wants, so they don't know where they belong. They will tell you 'I asked Tokyo and Tokyo said', but you're seeing the problem on the ground while telling me about Tokyo. Then there is another group to which Nakai belongs. He will allow you to do things and tell you, 'Don't worry about the PDM because the reality is like this'. I think that, in several occasions, he has been made unpopular sometimes because he doesn't completely agree with what Tokyo says, so we'll move on with the agenda ourselves, and Tokyo will realise its importance later on. They are the bridge between Tokyo and the recipient country. Thus, what we need to say is that the attitude of experts has an influence on ownership or recipients.

¹⁵ PDM is a fundamental document for JICA technical cooperation projects. As it forms a part of the Recode of Discussion (R/D), with the counterpart country serving as the basis of project implementation, its revision was permitted by multiple agreements from the JICA and other parties concerned. However, the R/D format was revised in November 2021, clarifying the revision process for the project site, target group, outputs, activities and indicators in the PDM for its flexible operation.

Chapter 3: First Lesson Study in Africa

Breaking free from dependence

Although the project started in the Central Province as a pilot phase, it was not easy to get the schools' heads and teachers to participate in training sessions. The training conducted by donors in Zambia paid large per diem and transportation fees, which were incentives for teachers to participate in the training. According to an administrative officer at the Lusaka Provincial Education Office, 'Zambian teachers are poorly paid, and many of them have second jobs after school, so asking for per diem for training outside of work hours is a sort of natural demand'. However, since training for the Lesson Study project is funded by the Zambian government through the education policy SPRINT, implemented by the MoE, the JICA does not plan to pay for any expenses except for the dispatch of experts and third-country training. Changing teachers' mindset was a particularly difficult challenge, but Dr Banda explained the importance of making them feel a sense of ownership of their pupils' learning.

I was constantly thinking about how Lesson Study could be practised on an ongoing basis, how teachers' dependence on being paid for participating in donor training could be eliminated, and why we needed to provide money to eradicate their own ignorance. It is not easy to change a mindset shaped by one's culture and system. We started to convince hundreds of teachers, the ministry, the province and districts and the headteachers. It was not an easy battle. That is the biggest challenge I've ever experienced in my professional life of 27 years. What I realised was that they were not seeing the problem, so they couldn't accept the problem, and everyone else was in denial. And the best they could do was always to blame the child for failure.

Third-country training is not a trip abroad

In the project, third-country training in SMASSE in Kenya, Philippines, Malaysia, Indonesia and Japan played an important role in strengthening the capacity of Zambians and improving the quality of Lesson Study. Teachers and other participants of third-country training served as project facilitators, bringing the concepts of 'learner-centred approach', '*kyouzai-kenkyu*' and 'pedagogical contents knowledge' (PCK) to the Lesson Study.

However, prior to the start of the project, the Human Resource Department of the Zambian Cabinet Office had the final say in the selection of personnel for all training programmes. As a result, the right candidates were not always selected, both from the MoE's and projects' perspectives. Dr Chileshe, a former representative of JICA Zambia, noted that a few people

viewed third-country training as an ‘opportunity to travel abroad’. To give the project the authority to appropriately select training participants, Dr Chileshe approached the Human Resource Department and lobbied to transfer TESS to the MoE. He describes the process of convincing the MoE staff who were willing to participate in the third-country training as follows:

In the course of my work, I have had many opportunities to visit the Ministry of Education, and I have been personally asked to go to Japan as well. I had to give them the example that I had never been to Japan either, to make them understand that JICA training is not such an opportunity, but that it is basically for teachers. Even Mr Tindi had never been to Japan.

The number of participants sent to Malaysia and Japan was limited, and Mr Tindi, as the person in charge of third-country training, made every effort to clarify the reasons for the participants’ selection. As the project’s senior manager, he set the standard high – ‘If the director of the MoE asked me to send this candidate to Japan, I would say no’, and he himself, who had been involved in the project since its inception, had never participated in any training in Japan. The project then basically left the selection for third-country training to the headteachers based on the judgement that they had the best understanding of their teacher’s performance in the school and the greatest incentive to select appropriate candidates because the trained teachers would benefit from promoting in-school training.

Upon returning from the training, teachers were asked to share the knowledge they had gained there with other teachers at the facilitator workshops. At the same time, follow-up activities were planned, such as field visits to Zambia by trainers from Kenya, Malaysia and Japan, where the training was held, to observe the trainees’ activities; thus, participants had to be serious about applying what they had learnt. The participants are still registered as resource persons for Lesson Study at the Provincial Education Office, where they share their knowledge at workshops held by the MoE and training opportunities by other donors.

What it means to learn in Japan

From Phase 2, the project provided tailor-made training programs by universities or other organizations in Japan specifically for Zambian counterparts, in addition to JICA standard training (group and region-focused training programs) in which participants are from other countries as well. Dr Nakai said that ‘training in Japan provided an important opportunity for counterparts to think about the substance of Lesson Study, in fact, the core of how to offer their lessons’. The project introduced problem-solving classes that allowed children to participate and to test

hypotheses in interesting lessons, but the teachers' lack of advance preparation (*kyouzai-kenkyu*) meant that they were not able to respond to diverse questions from the children. This became an opportunity for the counterparts to see this as an issue for themselves. Therefore, from Phase 3, tailor-made training on '*kyouzai-kenkyu*' was provided by requesting Japanese universities. Thus, it can be said that demand-based training in Japan responding to the issues that emerged from the counterparts contributed significantly to improving their capacity. The Standard Officer in the Provincial Education Office of the Central Province, who participated in training in Japan, stated that in observing demo lessons in Lesson Study, he realised that he had to look not at teachers but at the children, who were the subjects of the lesson, which enabled him to give meaningful advice to the teachers. He stated the following:

Even before going to Japan, we had been conducting Lesson Study, but the way we did it was simply to observe lessons, observe the teachers from behind, and point out good and bad points to each other in review. After training in Japan, I realised that we were only focusing on the teachers in class and not on what the pupils learnt. In Japan, observers would watch the pupils' faces to see if they were learning. Even when we grouped them together, we watched to see if the discussion in the group was really benefitting the learners. We were concentrating on teachers and not on the most important stakeholder – the pupils.

In particular, many training participants commented that training in Japan is designed so that its contents can be applied in the field in developing countries. Mr Pisani, a lecturer at Charles Lwanga College of Education in the Southern Province and CPD coordinator at his university, said that although he expected to be exposed to cutting-edge technology and information during training in Japan, he found that the materials used were familiar and accessible and could be used in Zambian school settings. He also realised the importance of the teachers' imagination in the preparation of the teaching materials.

I was expecting to see sophisticated things to use in a lesson in Japan. The things were coming from within – very simple things, you know, to just go to shops and buy a few things. There was nothing expensive about what they were using. What I would say about Japanese teaching is that they really use local environment and the things found in the environment to teach. There is nothing high tech, no expensive machinery, and everything is just one thing that you just get in a shop. So really, it's about the teacher. I saw containers for drinks being used as pendulums. So really, for me, one thing that struck me was that it's not that we are going to see very expensive equipment or operators. It is about the teacher's creativity.

Involving school administrators

Dr Nakai said, ‘Where school heads are strong, they also conduct proper class research. This is the same in Japan and is universal’. The importance of school heads, who are responsible for formulating annual plans and supporting teachers by providing teaching materials, was recognised, and stakeholder workshops were established to raise awareness among them. The workshop required heads to submit and report on monitoring on the implementation of the Lesson Study at each school, and a system was established for school heads to monitor Lesson Study practice in their schools. Mr Tindi noted the importance of fostering ownership among administrators, such as heads and deputy heads, and the effectiveness of the stakeholder workshops to foster their ownership as follows:

Each school is required to develop a Lesson Study programme at the beginning of each term and ensure that the programme is implemented. The role of school heads is critical here. Since the Lesson Study is school-based, the head must make time for it. [...] I focus on what heads call their schools, pupils and teachers. If heads say ‘my school, my pupils, my teachers’, they usually have full responsibility towards them and normally handle Lesson Study successfully.

One of the school heads of a primary school in Chibombo district was initially opposed to Lesson Study. However, through the stakeholder workshop, he now has a different opinion. From this perspective, the workshop could have been a turning point for the school heads, and we feel that it was very important to give them this opportunity.

As a facilitator, Mr Phiri, a lecturer at the Malcolm Moffat Teacher’s College who was involved in dissemination of Lesson Study, said that when he involved school heads in this practice, he used the results of the impact survey conducted in the Central Province¹⁶, which explicitly showed that their score in the national exam had improved with the introduction of Lesson Study. Because the results are of primary concern to school heads.

The programme began in the Central Province, where schools began to perform well thanks to Lesson Study. The Central Province was one of the worst provinces in the country in terms of national exam results, but the pupils’ results became the second highest after those of pupils in Lusaka. I believe this was the catalyst for the Ministry of Education to spread the programme. I used these results from the Central Province to promote Lesson Study in schools and set them up so that the pupils’ performance would improve. This is because school heads are usually very eager

¹⁶ ‘Report on the Impact Assessment of the School -based Continuing Professional Development Programme in Central Province’ (MoE, 2010).

to increase the pass rate in their schools. For school administrators, including heads, this is the major concern.



Stakeholder Workshop in Southern Province

Compiling experience

The project compiled the experiences gained through the practices of Phase 1 into the 'Implementation Guidelines for Lesson Study'. Mr Tindi, who was involved in the creation of this document from the beginning, said, 'By documenting not only what we experienced in Lesson Study, but also what we learnt in Japan and Kenya, adapted to the Zambian context, we were able to reflect on our own activities'. Furthermore, as a result of the research and studies supported by the project, good practices from each province were incorporated into the guidelines, which were revised from the first to the fifth edition as experience accumulated. Ms Kazeze, the coordinator of the Provincial Resource Centre in the Central Province and a member of the PEST who was involved in the development of the guidelines from the beginning, said, 'We felt proud that we were able to continuously improve our own practices through the development of the Guidelines for Lesson Study.'

In addition, the *School Management Skills Book* was developed for school heads and school administrators. It was prepared by PEST in the field to help manage Lesson Study in schools and includes the roles of teachers, department heads and deputy heads and how to reach out to teachers. Kazeze, one of the members of PEST at the time, notes the need for a bottom-up approach that delegates authority to those in the field closest to the pupils, such as schools and zones, and the importance of providing guidelines and skills books that are easy for school's personnel to use.

One of the learning experiences in this journey was realising that the project is supposed to devolve power to the school. I think somewhere towards 2010 to 2011. There was a move of schools, regions and zones to be more accountable, and so that as a very important step because, ultimately, schools and zones were to be the owners of this initiative or the intervention. If they clearly understood what it was meant, and they held and embraced it, then it would last a little bit longer, or its impact or acceptability was going to persist over time. That move towards devolving the involvement of the people at the national level to the people at the bottom – yeah, I think that that tip is very important in any project. It shouldn't be pushed by the people at the top, but gradually, the top should introduce, then the bottom should take over. I think that step was key with help over the Guidelines, Skills Books and kyouzai-kenkyu and so on. I think they were very helpful at that particular time.



Guidelines and manuals for Lesson Study developed in the project

Beginning of expansion phase

After Phase 1 from 2005 to 2007, Mr Tindi and Dr Banda were looking for a means to move on to the next phase. At that time, Dr Nakai suggested to target two other provinces – one in the urban Copperbelt and the other in the rural Northwestern Province – to test how Lesson Study could be implemented in different settings and to serve as a springboard for dissemination throughout the diverse country of Zambia. In rural areas, there are fewer teachers in schools, and discussions are not as active among them. Urban areas, on the other hand, have many teachers and excellent human resources, but the challenge is how to organise them. Mr Tindi already understood this from the experience in SPRINT and thought that introducing Lesson Study in regions with these different attributes and accumulating lessons learnt would be a stepping-stone for future nationwide expansion.

In Phase 2, it was decided to maintain support in the Central Province through the introduction

of Lesson Study in primary schools, where teachers had limited science and mathematics teaching abilities, in addition to non-science subjects in secondary schools. In general, in Zambia, primary teachers are good at pedagogy to attract the pupils' attention, while subject-specific secondary teachers have a deep understanding of subject content. According to Mr Tindi, 'by conducting Lesson Study primary and secondary teachers together allowed them to leverage the strengths of both groups and achieve a synergistic effect'. Furthermore, many stakeholders believe that the introduction of Lesson Study in all subjects has strengthened sustainability in schools, as described below by the deputy head of Mwayasunka Secondary School in the Central Province.

At first, the Lesson Study was conducted only in maths and science, and teachers of other subjects said that the programme was only for them and that we had nothing to do with it; however, now all teachers, including those of other subjects, are participating in Lesson Study. I believe that the participation of all teachers has increased the sense of ownership and has allowed Lesson Study to be sustainable.

Sharing visions

From the start of Phase 2, Ms Mubanga was appointed Director of the TESS in the MoE, the agency implementing the project. She was a secondary school biology teacher and then the Principal of the Kwame Nkrumah Teacher College in Central Province before assuming her new position. Dr Nakai recalled that 'she led Mr Tindi and Dr Banda and showed strong ownership and had strategical perspectives. During the expansion phase of the project, Ms Mubanga took over as Director of the implementing agency, and her vision was shared with the senior management of the MoE and the project members, which was a major success factor'. Ms Mubanga always considered how the project's sustainability could be ensured, shared this awareness with the project members, and urged the members to implement the activities with the ownership of the Zambian side. She describes how she came to this vision as follows:

When I was in the Provincial Education Office, the girls' education project was started with the support of donors. I clearly remember going to Mumbwa to meet a group of teachers and headteachers, talking to them about this project which was coming. Then one of the headteachers started to give the vote of thanks and said, 'Thank you very much for bringing this project and goes into a series of projects.' Then said, 'We had SHAPE'¹⁷ and it became SHAPE less, we had AIEMS and it became AIEMS less, what is there to stop this PAGE becoming PAGE less?'. Those

¹⁷ Self Help Action Plan for Education (SHAPE), Action to Improve English, Mathematics and Science (AIEMS), and Programme for the Advancement of Girls Programme (PAGE) were the donor supported projects in the education sector in Zambia.

words really echoed in my mind. Here are people tired of projects.



Ms Mubanga (Former Director of TESS)

Transfer project to programme

Phase 2 was also a time when the project strengthened SPRINT and put in place the implementation structure to support Lesson Study. The stakeholder workshops held during school vacations provided regular reports from each school and opportunities to monitor activities at the school level. In parallel, the MoE developed a support structure from the central to the zone levels. PEST and DEST were established, which visited schools to monitor and support Lesson Study. In addition, the status of implementation in each province was reported at the quarterly meetings of the NEST Technical Sub-Committee, thus establishing the monitoring system from schools to central. As the director of the project's implementation agency, Ms Mubanga always wondered what they could do to make a programme and not a project, and she aimed to strengthen SPRINT as the existing education policy at school sites.

What we realised today was that there were too many projects that were coming in, and it became confusing to the teachers. They would go for project that had money. So we said, 'It has to be a programme, not a project'. And a framework was created by SPRINT, we don't have to reinvent the wheel. We can use SPRINT, it's a programme for the term. Also, we recognise that the teachers could not do it every week. So, if we could have this programme they do for the term, then we can sustain continuing professional development. That's the programme we anchored in this SPRINT for sustainability – it is their programme. They have to find the means, find the resources, because what we also noted, like I said, is that when it is a project by the donors, we go for who gives more money [...]. That project would run, but once we ran out of money, that was the end. So, the school was like 'this is your programme. No money is coming in. Use whatever you have, budget it within, as we'll try to sustain'. That was the reason why SPRINT was pushed.

Dr Nakai also noted another advantage of the Lesson Study project, namely that it appeared to be the MoE's own project. In fact, many teachers in the target provinces included in the national rollout of Phase 3 are unaware that the JICA is supporting Lesson Study. Even the guidelines and teaching materials financed by the JICA are not clearly marked with the JICA logo on the cover because the training participants would demand daily allowances if they knew that the project was supported by a donor. On the other hand, Dr Nakai describes that, when advocating 'visibility', the JICA sometimes expressed concern about how the project handled public relations, which was a troubling aspect for him as project expert.

Compiling a Master Plan

Ms Mubanga recalled that 'at the time, the challenges with regard to access were being resolved, but quality of education was so bad that we wanted to cry. Our goal was to develop teachers who could teach classes that children could learn from'. Under these circumstances, the Ministry of Education began working on the Master Plan for Enhancing Teacher Professional Growth through School-Based Continuing Professional Development (SB-CPD), which included not only the nationwide introduction of lesson plan but also its introduction into teacher colleges, which was to be the subject of Phase 4. The Master Plan was also intended to avoid one-off projects from donors and to incorporate those as programmes of the MoE. In other words, rather than unilaterally stating to donors that they would support literacy in primary school, Ms Mubanga said that they were asked to ensure the inclusion of literacy in the Master Plan. She recognised the importance of developing a Master Plan through her observation of lesson plan in Japan, which shows that a concept of 'critical thinking' in Lesson Study also contributes to the programme's sustainability.

Before establishing the concept of Master Plan, we spent a month going around looking at what Japan does. And for us, in our mind, it became like 'look, let's study something that we must do'. Not because it's a project, but because we're seeing it working. We're seeing how a teacher can review their own lesson, come up with their strategies. [we're seeing] what didn't work. Then I'm able to sit with my colleagues, make suggestions – this what we want. So that's how we created the Master Plan and presented it, and it was accepted.

Training human resource in Zambia

The Master Plan for Enhancing Teacher Professional Growth through School-Based Continuing Professional Development (SB-CPD) called for the training of facilitators and school

heads needed for the national rollout of Lesson Study, either at the NSC or at the National In-service Teachers College in Chalimbana (NISTCOL). The intention was to utilise the Zambian human resources trained in Kenya, Malaysia and Japan to develop the necessary human resources on their own, without relying on the project. Initially, Ms Mubanga began coordinating with the NISTCOL, but the intention was denied due to strong opposition from university officials who were concerned about the increased workload and redeployment of personnel. On the other hand, the NSC, a unit under the TESS of the MoE headed by Ms Mubanga, was at that time very poorly organised, staffed and equipped, and it was malfunctioning. She recalled the time and described the situation there as follows:

Then, when I became Director of TESS, the Science Centre was part of my responsibility. I went to visit it to see what was going on. I came back and asked the top management, 'Let's just go and have a meeting at the Science Centre' when we used to have meetings every Monday. We arrived at the Science Centre – all the broken down cars at the MoE were dumped there. The roof was leaking, so when it rained, people would be on one corner, and everybody was shocked. This is part of the MoE. Literally, it was not doing anything. They were producing the mobile labs¹⁸ – the old version – and they were doing like 10 per month and also running a bar to generate its own funds, but it was surprising to see a ministry of education running a bar. Everyone present at the conference was shocked to find a Department of Education facility in such a state of disrepair. Before that, they did not even know what a science centre was or what should be done there in the first place.

Ms Mubanga said, 'We are lucky to have found Dr Banda' and pleaded with her Secretary General, 'If you think things are fine the way they are, that's fine. But if you think we need a change, put Dr Banda at the top. We need a motivated person in this country'. Dr Banda was appointed director of the NSC, and with his appointment, Ms Mubanga began to feel a sense of urgency. She wanted Dr Banda to study in Japan to lead the programme with internal talent rather than relying on outsiders, and she hoped that he could replace the Japanese expert as the future head of teacher education in Zambia.

I also found that Dr Banda needed a certain mindset to promote this programme. Working with the Japanese experts, I found that their way of thinking is very different from ours. I felt that after being exposed to a different environment and a different culture, he should return home with not only the ability and skills but also the mentality of a Japanese expert. If he thinks like other Zambians, we will not be able to change anything. We wanted him to start the process of change

¹⁸ Mobile labs are simple, operable science experiment kits provided by the National Science Centre with funds from the Education Sector Pool Fund and other sources and distributed to schools without science labs.

with the mentality of a Japanese person, and that decision was not easy. There were times when I came back to myself and wondered, 'What am I doing?' But I thought about what I wanted to accomplish and pushed forward with the process of reform.

Ms Mubanga discussed the matter with Dr Nakai and the JICA Zambia office. Dr Chileshe of the JICA Zambia office expressed great concern about the absence of Dr Banda, an important counterpart of the project; however, based on his own experience in personnel selection at the MoE, he concluded that at least a master's degree would be a condition for his promotion if the project was to proceed with Dr Banda at the centre of the MoE. Then, he suggested that Dr Banda study for a master's degree in Japan through the embassy's long-term study abroad programme.

The NSC was in a state of limbo during Banda's 2 years abroad, but since his return, it has come back to life with a burst of activity. The mobile labs which were produced only 10 units a month can now be produced one unit a day, and its model has also evolved from simple kits to what can literally be called a 'mobile lab'. The graveyard of abandoned cars has been given a new look, and visiting MoE officials were struck by the changes. Ms Mubanga recalled, 'It was as if the energy he had was spread throughout the centre; the mindset of the staff working with him changed, and the improvement process accelerated'.

As the director of the NSC, Dr Banda led the rebuilding plan. It is now subsequently transformed into the most well-developed facility of MoE by attaching a Japanese Grant Aid for Poverty Reduction Strategy (PRS) for constructing a training and laboratory building as well as the MoE funded the building for administration. As a result, the Science Centre, initially a unit of the TESS, was upgraded to a new Department in January 2018. Accordingly, the jurisdiction of the project was transferred from TESS to the Department of NSC. The newly established Department of NSC has a larger budget and can also make decisions on the use of human resources for training or monitoring in a timely manner and independently, without going through the TESS as before. Dr Banda is now the youngest director of the MoE to lead the Department of NSC.

As of 2022, the NSC has 178 staff members, and many of its core group of trainers were staff or teachers who have worked diligently on Lesson Study through projects in their provinces and have been promoted and transferred to the NSC in recognition of their activities. Dr Banda expressed that this accountable promotion system has encouraged the spread of Lesson Study as follows:

I did not engage in Lesson Study for promotion, but as a result, I believe that my own promotion has broadened the impact of Lesson Study. Many of the teachers who worked hard on their Lesson Study were promoted as a result, not by their intention. In other words, those who were promoted were those who proved they could contribute to the field. However, thanks to this system of accountable promotion, many are able to improve their own abilities.



Administration building of the NCS

Difficulties faced in national expansion

In Phase 3, while continuing the support for Lesson Study that had been disseminated to the previous three provinces, the project expanded nationwide with the addition of the remaining seven provinces. The number of Japanese experts increased, and the system for nationwide expansion was put in place. However, because many activities were implemented as part of the MoE's regular work, there were delays in activities as the MoE took time to complete the budget execution procedures and did not execute the budget even after the procedures had been completed. In addition, duplication of activities with other donors caused problems such as the unavailability of key personnel for project implementation. Furthermore, many difficulties arose in the national rollout, such as provinces refusing to participate when it became clear that JICA would not provide funding, provinces reluctant to allocate budget and human resources for Facilitator Training, and provinces that placed more emphasis on donor activities for which daily allowances and accommodation fees were paid. Therefore, in the expanded provinces, the counterparts, including Ms Mubanga from the MoE, spent much of their time explaining that Lesson Study is a programme of the MoE.

Newly added province teachers also resisted changing the lesson planning and teaching methods they had been using, and many school heads with a lot of work to do, feeling the pressure

of the national exam results, were critical of Lesson Study, which they thought would take up a lot of their time. Although the national rollout was completed, ensuring its sustainability was not always sufficient, and Dr Banda said that he was always looking for ways to establish a structure for it as follows:

At some point, our capacity became insufficient, and the project was no longer working the way we wanted it to. It had its own challenges left. We managed, of course, to finish with support from the MoE, but it was not as I would have expected. Sometimes the system goes down. I'm now thinking 'how do we build a system which can be sustained, so that whatever you put in you don't lose?' Those are the things I've been doing, and you can't believe it. When I went to do my master's and PhD, I opted to do the same thing as my study area. The word 'sustainability' is used to retain the mechanism, but what exactly it means and what methods are sustainable for us when we receive development assistance in Zambia is my personal interest.

Institutionalisation to ensure Lesson Study

Ms Mubanga said, 'When we rolled out the CPD nationwide, the challenge was that many teachers were not interested in Lesson Study because they feel that it is time-consuming. The attitude of teachers who accept CPD was not to be a good teacher, but rather to obtain qualifications and other credentials in order to be promoted and to earn higher salaries'. Therefore, a legal framework was considered to link CPD in schools to the treatment and promotion of teachers, taking a cue from the Kenyan system. With the support of the MoE, Ms Mubanga convened lawyers, the Minister of Justice and university lecturers to form a committee and began the process of examination to establish the Teaching Council of Zambia and a legal framework to institutionalise CPD. While undergoing turmoil due to political upheaval, the Teaching Professional Act as a legal framework was developed in 2013, and the Teaching Council of Zambia was also established to promote CPD, including the monitoring of Lesson Study. Subsequently, in 2016, the Zambia Teaching Council introduced a teacher registration system¹⁹, whereby teachers who participate in Lesson Study can earn the credits required for the renewal of their teaching licences every 3 years. Ms Mubanga mentioned that the institutionalisation of CPD through the establishment of the Teaching Council of Zambia has brought about changes in

¹⁹ For the renewal of teaching license, all teachers, from preschool to university, need 150 points in three years, and the points from the participation in in-school training including Lesson Study are particularly high. In 2019, with the support of UNESCO, the Teaching Council of Zambia issued the 'Standards of Practice for the Teaching Profession in Zambia' as implementation guidelines. Furthermore, to ensure transparency and convenience, the institutionalization has been strengthened by using IT to manage the recode of the in-school training online.

teachers' attitudes and awareness towards classroom research.

We wanted our teachers to be constantly learning. When I was a Standard Officer, I noticed that teachers who graduated from colleges 20 years ago had not progressed in any way. In other words, they repeat what they learnt in training school every year for 20 years. What they learnt 20 years ago is not applicable in today's classrooms. So the idea of continuous professional development (CPD) was to see if we could change the mindset of teachers to continuously acquire new knowledge. The Teaching Council of Zambia evaluates not just the amount of time teachers spend attending in-school training but also the quality of the work they are doing. This has changed their mindset and made them more willing to acquire new knowledge.

Lesson Study as action research

One initiative to ensure sustainability is the publication of *the Journal of Teacher Professional Growth*²⁰. Director of Research and Innovation at the NSC, Dr Chileya, who has been in charge of publishing the journal since 2013, said that 'Lesson Study has features of action research, as its name implies, and by compiling and sharing the results of Lesson Study in journals, we can make continuous improvements'. In fact, many of the research findings related to Lesson Study are reflected in project guidelines and shared with stakeholders through facilitator workshops and other opportunities, and those findings are applied in practice in the field.

Furthermore, the participation to international conferences provides core personnel in Lesson Study with opportunities to learn about international trends and ideas from educators in other countries. Dr Nakai, who is in charge of the journal's peer review committee, is sometimes asked by JICA staff, 'How does the journal lead to pupils' performance? Is it a waste of money?' However, he believes that publishing the journal is important in Africa, where there is little accumulation of education, research and practice. It also gives core personnel the opportunity to know trends and ideas from other countries to look at their own situation objectively and to create future policies.

Ms Muzona, the Provincial Resource Centre Coordinator in Lusaka, presented her research to the World Association of Lesson Studies (WALS) in China in 2018 and was awarded an honorary doctorate from a British university interested in her paper. In addition, Ms Kasonde, the school

²⁰ With the support of the project, the publication of the *Zambia Journal of Teacher Professional Growth* (ZJTPG) was initiated. In addition, the National Science Centre began publishing the *Zambia Educational Journal for Science, Technology, Engineering and Mathematics* (ZEJSTEM) in 2021. Mr Banda will serve as the editor-in-chief of these journals.

head who wrote papers on Lesson Study and presented them at the WALs in Indonesia in 2014, noted that presenting the results of her research led to job opportunities and personal development.

During the project, I've presented papers in Indonesia, in Exeter, in Amsterdam and in the Netherlands, and recently, those interested in my research asked me to conduct research on mental health at the school level, and that contribution made it into a leading African magazine in the USA. So, for me, personnel have developed because of the exposure that I've gained through projects and the ones that came before, and I didn't develop just as an individual. It's because I was supported by my fellow teachers, those who knew better than I did. I was also contributing in a way, and because of the research papers and being involved in CPDs, I think my interest in education programmes was increased. And that's how I've risen.



Presentation on Lesson Study WALs in Indonesia



Published journals

Chapter 4: Expanding Lesson Study

Lesson Study at teacher's colleges

Although the nationwide mechanism for in-service training for Lesson Study was established under the framework of SPRINT, the capacity building of teacher's colleges as described in the Master Plan remained untouched. In such a situation, the need for lecturers and students in colleges to learn SPRINT and Lesson Study was emphasised by the participants of third-country training. In Japan, they observed the cooperation between the education departments of Japanese universities and attached primary and secondary schools to promote education and research. Phase 4 (IPeCK) aimed to build the model in which lecturers from teachers' colleges and teachers from cooperating schools (such as affiliated schools in Japan) would conduct Lesson Study together and enhance their knowledge and skills was initiated in teachers' colleges and cooperating schools. The IPeCK was initiated in the Central, Southern and Copperbelt Provinces.

Since Phase 4 of the project targeted teacher's colleges, the project also faced a new challenge. At the beginning, many lecturers at these colleges believed that their 'knowledge and skills were at a high level and did not need to be improved' and that they did 'not need to visit schools'. Ms Kazeze, trainer at the NSC, described the challenges she faced during Phase 4 as follows:

The goal of IPeCK (Phase 4) was to link the pre-service with the in-service training so that lecturers from teachers' colleges and teachers from schools could learn from each other, but this did not work at first because, in Zambia, there are no opportunities for university lecturers and teachers to work together, and schoolteachers do not want to engage with university lecturers. They feel a sense of inferiority and that university lecturers have higher level of knowledge.

However, as the project progressed, their attitudes began to change, especially among the college lecturers who participated in training in Japan. A lecturer from the Charles Lwanga Teachers' College explained that when he participated in the training in Japan, he saw university professors visiting primary school lessons and exchanging opinions with primary teachers without any separation, which influenced his own sense of values.

In Japan, it was refreshing to see university professors bringing all their expertise and experience to the classroom and interacting with schoolteachers and pupils. This is because in Zambia, school classes are taught only by teachers, and it is impossible for university professors to come to on-site schools, much less conduct lessons at primary schools.

At the target schools, Malcolm Moffat College of Education in the Central Province and

Charles Lwanga College of Education in the Southern Province, Lesson Study has been expanded to subjects other than maths and science, and in-school training has been conducted on an ongoing basis. Mr Pisani, lecturer at Charles Lwanga College, said that he hosts workshops with the Provincial Education Office and Teacher Resource Centre, and the number of cooperating schools has increased from two to five. Lecturers from teachers' colleges trained by the project expanded activities to strengthen Lesson Study and *kyouzai-kenkyu* with nearby primary and secondary schools.

Why should schools other than cooperating schools be left behind when they have the same teachers? We decided that we needed to share these good practices with other schools. We then used the Provincial Education Office as a conduit to disseminate Lesson Study through the District and Provincial Resource Centres. They were very supportive of all these programmes, sharing their knowledge of PCK, kyouzai-kenkyu and pedagogies. Our role is to be a model for teachers.

Teaching practice has changed

In Zambia, college students for primary and secondary teacher courses require 3–6 months of teaching practice. However, trainees are forced to simply substitute for teachers and teach classes, and many students lose respect and admiration for the teaching profession because they cannot get feedback from the senior teachers at the training site. Under such circumstances, the participants who observed Lesson Study jointly conducted by internship students with neighbouring cooperating schools (affiliated schools) in Hiroshima University and the Indonesia University of Education have begun sending students in groups of about five to schools to improve their knowledge and skills while working on Lesson Study with schoolteachers. In addition, each group is assigned a lecturer, who now provides guidance during teaching practice. A Malcolm Moffat College student who completed their teaching practice at his primary school described the support provided by the college lecturers in their teaching practice as follows:

Before lesson, students show the lesson plans to the faculty adviser and get comments such as 'This is not good, try this' or 'Let's change it this way'. Your lecturer will give you advice again after observing the lessons. In addition, if you do not have access to reference materials or teaching aids, they will lend you a tablet and allow you to download images and other materials. Sometimes, the lecturer themselves will teach a class at the school and show us his lesson. We can observe and comment on it with each other.



Lesson Study by practice teachers College (review session)

The school head of Charles Lwanga Primary School in the Southern Province, which hosted the teaching practice, indicated the following differences in the qualities of the interns from Charles Lwanga, which was the project target, and those from other teachers' colleges.

Students from Charles Lwanga College of Education already have knowledge of Lesson Study, and they are able to prepare accurate and detailed lesson plans and conduct lessons as instructed. Students from other private universities, however, tend to make only superficial lesson plans, and their lessons tend to be one-sided and teacher-centred.

Third-country training for African countries

The Strengthening of Mathematics and Science Education in Western, Eastern, Central and Southern Africa (SMASE-WECSA) network had been implemented in Kenya with the neighbouring countries, but in 2006, Mr Tindi, the counterpart of the Lesson Study project in Zambia, took over its leadership. Furthermore, in 2013, when Dr Banda replaced Mr Tindi as chairman, the name was changed from 'SMASE-WECSA' (meaning of Western, Eastern, Central and Southern Africa) to 'SMASE Africa' in anticipation of future participation from the Maghreb countries of North Africa. Currently, two types of training on Lesson Study and *kyouzai-kenkyu* for English-speaking countries, called KCCP, are run by Zambians with the financial support of the JICA. Dr Banda, President of SMASE Africa, believes that 'Zambia should be able to provide support that is adapted to each country's system, rather than simply promoting the Kenyan model', and he is satisfied to realise his original vision of 'contributing to math and science education in Africa'.

Dr Banda also mentioned that 'Tindi is the one who took over the presidency of SMASE Africa

from a Kenyan in 2006, and when he retired in 2013, the 32 African members again elected me, a Zambian, as president. This shows that Tindi was a key player in getting African countries to recognise the practice in Zambia'. The following vision of Mr Tindi, who was the president for many years, is still followed today and is shared in third-country training for African countries.

Giving to other countries, one thing is that it is Zambian culture. No matter how little food you have, if they ask you to share, you just share. Of course, different individuals have different ideas, but I think sharing is one of the aspects of Zambia's culture. I hope to achieve a sense of African unity by sharing the practice of Lesson Study that we have been given. During the training, all the administrators from the ministries of each country sleep in the same school dormitory together with teachers. They do not stay in hotels. They are former teachers who have also faced the same challenges and have experienced the same trial and error as teachers who are teaching in classes. Above all, they share the common goal of making African children happy.

Many teachers and facilitators have participated in third-country training in Zambia as well, and it has been a continuous learning experience for them as well as for participants from other African countries. The officer from the District Education Office in Chibombo who participated in third-country training as a facilitator said that 'the interaction with teachers from other countries encouraged me to see that different countries are facing the same challenges'. Third-country training was held online in 2021 and 2022 due to the spread of COVID-19, but face-to-face training is planned to resume in 2023.



Lesson in third-country training in Zambia

Application to STEM education

In 2019, the Cabinet decided to open 52 new STEM schools, including former technical high schools, under the directorate of the NSC, with the aim of developing intelligent industrial human

resources to move away from an industrial structure dependent on natural resources such as copper. The NSC developed a syllabus for STEM, provided training to STEM teachers, improved school capacity to manage STEM curriculum and developed STEM assessment criteria by using the experience gained from the Lesson Study project in a ripple effect. Dr Nakai said that after working hard to improve their lessons through Lesson Study, Zambians themselves finally realised the fundamental issues with their curriculum and textbooks. To solve them, the STEM curriculum was created based on the experiences of previous projects.

In the STEM curriculum developed in 2019, the emphasis is on the acquisition of non-cognitive skills through student-centred lessons; that said, the STEM curriculum was developed to embody the lessons learnt from the Lesson Study projects, as Dr Banda notes: ‘Paper exams are only part of learning and leave out a large part of what learners can experience in student-centred lessons’. He believes that the skills learners acquire through the STEM curriculum can be non-cognitive skills, such as acquisitive, organisational, creative, manipulative and communicative. The MoE has changed the pass/fail decision based solely on the national examination (written test) and introduced school-based assessments (SBA) in which 35% of the assessment is based on written examinations and the remaining 65% on school performance, practice and skills, rolling out SBA to all STEM schools. Following this, the MoE and the Examinations Council of Zambia (ECZ) reformed the examinations in 2019, moving away from a one-sided evaluation of national exam to the process evaluation using portfolios in schools, including practical skills. SBA was introduced for some subjects. Thus, many MoE officials have pointed out that the JICA Lesson Study project has brought new academic assessment standards to Zambia. At the same time, the establishment of such standards has also led to the importance of Lesson Study (student-centred lesson) for the future.

Using Lesson Study in human resource development

‘Mr Tindi and Dr Banda are going to retire soon. Do we need train younger people?’ Nakai was constantly asked this question every time a new JICA representative was appointed. He answered that ‘those are the only ones who stand out, but actually they are different types, but there are many staff at the NSC who understand the essence of the project, and they are doing very well, although they do not stand out’. The project was driven by a small group of highly conscious and talented members; however, Dr Nakai believes that the next generation of personnel nurtured by them will be able to carry on the vision of the first generation and continue the activities.

The following narrative of Dr Banda suggests that the bottom-up approach used in Lesson Study is also applied in the development of the human resources he heads at NSC and that the ‘trial-and-error process’ emphasised by the Japanese experts is followed in staff CD.

Staff in NSC is currently crammed into a conference room to work on the Master Plan. This work will not be done in a haphazard manner, but rather, the staff will work on their own agenda by sharing visions for the future, 15 or 20 years from now. I am sure you have witnessed on site that we are not punishing our members but giving them these assignments so that they will be able to solve problems on their own. They have the potential to do more than they are capable of doing now, and we bring that potential to the maximum. We believe that we can build the foundation of competence by working with our members to think ‘How can we reach this?’, and not all problems that arise are insurmountable. If we can reflect on them and use them to expand our own capabilities, we will be able to deal with them.

In several of the school sites visited during the survey, Lesson Study is being used in school administration. Ms Kasonde, a secondary school head, is one of those who use the approach in school administration, including training teachers, and she encourages teachers to change their behaviour by adapting Lesson Study facilitation skills.

I earned the diploma in management when I entered school administration, and I have used the skills I have gained from Lesson Study in whatever challenges I have faced. This is applicable in all aspects of life – not only in teaching but also in identifying what the challenge is in any given situation and working with others to figure out how this challenge can be solved. Yes, it is all about Lesson Study. It is about developing a spirit of challenge that says, ‘This is our challenge, and we will solve it ourselves’.

Teachers do not change instantly, but my role is to support that process. When teachers come to me with assignments, I ask, ‘What do you think is the right way to do this?’ and then I actually try them out. You just have to guide them to achieve what they want. A teacher once called me after watching one of my lessons and asked me what I thought would be the best way to teach pupils. I pushed the question back to her and told her to take a good look at her classroom, think about what could be done and pass it on to me. In this way, I emphasise their own awareness.

What about ownership and sustainability?

In Zambia, the JICA is currently in the process of forming its next education project. Regarding the project’s formation with the JICA, Mr Tindi said, ‘It is not simply a matter of their wish to transfer the experience of Mozambique and Ethiopia for short-term results, but it all depends on

the background and the current situation'. He added, 'I hope that this study on CD will provide an opportunity for the JICA to rethink the importance of ownership and sustainability'. Dr Banda also commented on support by the Japanese government:

I sometimes feel the pain when Japan goes to conferences and other occasions to say that we have invested a lot in African countries. This is because we have not been able to solve the root causes of Africa, despite much investment from Japan.

Dr Banda expressed his concern about the JICA's CD assistance through his past experience with JICA projects, his observations in other countries and the project formation currently taking place in Zambia.

My fear is that Japan is losing its original identity towards the Western approaches to aid in Africa. We need to stick to our original mandate. The current models – for example, USAID, World Bank and IMF – are using whatever they do. I know Japan contributes to that big coffer, but in Japan and Zambia, culture is almost the same. Humanity comes first. This is where my concern is – that if Japan is going to lose that identity and take the Western model, then we'll go back to what we have been trying to run away from.

When you talk about history, it has taken Japan almost 150 years to establish Lesson Study. I attended Lesson Study in Japan at all different levels. We have not reached that level. If Japan took 150 years, you can't tell me 10 or 15 years is a lot for Africans. Now, we're still dealing with the preliminary phase. So if we can protect this preliminary phase, then seeds will grow. Foreigners can come and tell me what they want. If I don't agree with it, I'm not to do it. This is a level at which they will not give me money. It's not the money I'm interested in. My interest is this thing which I'm doing, benefitting children in class and Zambian children in the environment in which they are living – somewhere where they can see this chair today.

Do they know how many years it took us to make my pupils there reach this level of quality? I can export this thing to any country. So if we're able to do this, it means we have the ability to maybe say that the pedagogies are in there somewhere. We need to start unlocking them. That's my mission.

The main issues, as we look at how Lesson Study has gone, is that we may need to reflect now and say 'Is there a way in which both Japan and Zambia should rethink?', which may affect ownership. If you come and tell me 'Benson, this is your problem', I will look at you twice. this is my problem. Maybe the problem you are telling me is not the main problem. So, first, ask me 'What is your problem?' When you go to the hospital, the doctor will ask what the problem is even if they have seen that your leg is broken. They will measure temperature and other things to make sure that you

can heal, but you don't know what kind of other symptoms this person has. And I think we may need to look at those approaches.

Chapter 5: Teacher Growth and Pupils' Learning

Chalk & Talk

'Chalk & talk', a teacher-centred lecture-type in which the teacher copies the content of textbooks on the blackboard and explains it, is common in Zambian lessons, and few teachers can conduct lessons that are expected to improve learners' ability to apply knowledge and think. This has been pointed out as one of the reasons why children's learning has not improved. Mr Tindi described these conventional lessons as follows: 'The teacher's only concern is to finish the syllabus on time. In Zambia, teachers are the authority, and they think they know everything while the pupils' heads are empty, so they keep pouring knowledge into their heads'. He said that the paradigm shift was not easy. Mr Phiri, lecturer at the Malcolm Moffat College of Education, also expressed that 'before the introduction of Lesson Study, teachers were simply lecturing. They thought they could teach with only their own knowledge and that their way was the best'.

Students at Charles Lwanga College in the Southern Province, the target school of Phase 4, described the challenges of 'Chalk & Talk' through a comparison of the lessons at their college and their own experiences with traditional lessons at primary and secondary schools as follows:

In the primary and secondary school classes I attended, the teachers simply came to teach and left, without checking to see if the learners had understood the lesson. There were no teaching materials provided for the lessons there. Only the teacher had the textbooks, so the lesson was teacher-centred; or rather, only what the teacher understood would be conveyed to the pupils. Moreover, I don't think they kept up with the times because they kept using the same textbooks for years.

Other students suggested that teachers in the schools where they practice education still teach in a conventional manner and that their authoritative attitude can be an impediment to pupils' learning.

In my (teaching practice) school, most of the teachers were very coercive and said that 'this is how they treat pupils'. They treated the pupils as if they had no idea what they were talking about. Because the teachers were so overbearing, even if the pupils had something they wanted to say, they would immediately shut down and lose interest in the class. The teachers' attitude led to the pupils' low performance in school.



Conventional lesson (Chalk & Talk) in primary school without introduction of Lesson Study



Student-centred lesson in primary school with Lesson Study

Teachers having difficulties in lessons

In Zambia, when the concept of ‘basic education’ was introduced, primary school from grades 1 to 7 were upgraded to basic education schools (Grades 1–9), which included Grades 8 and 9 of secondary level (lower secondary). As a result, Grades 8 and 9 of basic education were to be taught by primary teachers who had not been trained as lower-secondary teachers. Simply because they had good grades in maths and science at school, primary teachers received lower-secondary teaching certificates (diploma) and were promoted as maths and science teachers in secondary

schools²¹. The Lesson Study project was formed to ensure the quality of science lessons in the context of these changes in education policy. Mr Phiri, who was working as a secondary science teacher in the Copperbelt, recounted the situation in his school at the time, noting that the teachers' lack of subject content knowledge was a factor in the pupils' failure.

Most of the teachers teaching maths and science in primary schools were not subject-specific teachers but rather secondees who were selected simply because they had scored high in science as a student. As a result, their knowledge of science was low, which affected the pupils' learning. By the time the pupils finished basic education (Grade 9) and entered Grade 10, much of the science knowledge they had acquired was lost. Because they had not been taught by specialised teachers, much of the knowledge they had acquired was full of misconceptions, which led to an increase in the number of pupils failing maths and science courses in many schools.

Upon the launch of the Zambia Education Enhancement Project (ZEEP²²) supported by the World Bank, the MoE conducted a baseline survey in 2018 and confirmed an existing correlation in subject content: where teachers face challenges, pupils' understanding is also lower. Based on these findings, ZEEP officials from the TESS in the MoE stated that strengthening teacher capacity is essential to improving pupils' learning.

Our concern was where pupils were falling short. To identify this, we administered a written test to teachers as well as pupils in the baseline survey. We found that the pupils were stumbling in specific contents. Surprisingly, the contents in which the pupils were having difficulty were not well understood by the teachers. We came to the conclusion that one cannot teach what one does not know. Therefore, we believe that teachers must first understand exactly what they are teaching.

Downside of exam-oriented learning

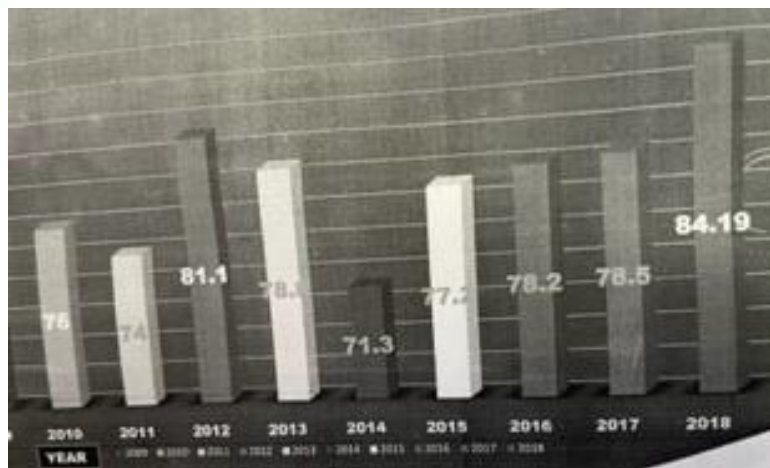
In Zambian schools, national exams are administered in Grade 7, 9 and 12, and the results are compiled by province and published nationally as if to encourage competition among provinces. When visiting schools, graphs of the results of the national exam over time may be seen in the head office. Ms Kasonde, head of a secondary school in Central Province, said, 'Many school heads and teachers are constantly under pressure to improve the results of the national exam, which leads to conventional teaching that emphasises finishing the syllabus'. Based on his

²¹ Teachers who are not qualified for their teaching school ages are called 'half-backed teachers', and the presence of many such teachers is considered a factor in the low quality in education, especially in science and mathematics, where teacher shortages are severe.

²² The ZEEP has been in place since 2018 to improve the quality of teaching and learning of science and mathematics in primary and secondary schools and to expand equitable access to education.

interviews with schools, Director of Research and Innovation at the NSC, Dr Chiley, explained that higher-order thinking skills may not be developed under such exam-oriented education:

We once interviewed province that had performed well based on provincial exam data published by the ECZ and asked them what they did in schools. The answers were very disappointing: 'We got into the pupils' heads with past exams and drills'. This may not help them, especially in lower grades, and they may not acquire higher-order thinking.



National exam results posted in a secondary school's head office

At Hillcrest STEM School in the Southern Province, where high achievers in maths and science come from all over the country, the internal exam is administered after enrolment to determine class placement. The school head, Ms Miyombo, is one who believes that it is difficult for students entering STEM to acquire applied academic skills through exam-preparatory education and that it is essential to provide Lesson Study (student-centred) for their future.

This school attracts students from all over the country with high national exam results. I have been at this school for 6 years and have learnt from experience that the scores these students get on the entrance exam are not truly indicative of their academic ability. They take the school's own assessment three weeks after enrolment. There we are shocked at the disparity between the scores the students get on the national exam and the results of the school's assessment. They go through long hours of practice test preparation to pass the exam. We believe that this kind of coaching for exam preparation is inherently different from learning because it is not applicable. Essentially, the knowledge that students learn proactively can be used even 5 or 10 years later.

Changing teachers' attitudes

Ms Kapumpa, deputy head of Mwayasunka Secondary School in the Central Province, has been working as a facilitator since 2005, when Lesson Study was introduced. She said, 'When we first started Lesson Study, we faced many difficulties, as most people did not understand, and some wondered what it was. However, through Lesson Study, teachers were able to objectively grasp the issues they faced, and as a result, lessons improved, and teachers gained more self-confidence'. Furthermore, Ms Kampumpa suggested that teachers became more proactive in their Lesson Study as they gained confidence as teachers and understood the benefits of conducting their own demo lessons in their classrooms.

When we first became facilitators, we were told, 'Because we are the participants, you show us your demo lesson'. After a while, however, people began to participate in demo lessons because they had planned them together and wanted to try themselves, and the participants gained confidence as teachers. Of course, when things are just getting started, there is always resistance to change. But as time goes on and people come to understand the benefits, they are willing to give it a try. Teachers are always ready to ask, 'Where do you think we should improve, and what do you think we should do about it?'

A student at the Malcolm Moffat College of Education in Central Province described the process of participating in Lesson Study at the primary school where she did her teaching practice and learning to accept comments on her own demo lessons in a positive manner.

At the beginning of the practice, I was sometimes angry at the comments on my demo lessons. But now I have come to understand what they were saying and that they were saying this to improve my lessons. This has made me more aware of the need to convey the right things to the pupils. I have also become more confident on contents, and I study more from books and other sources than before. Now I make sure to look for teaching materials because I can't enjoy the lessons unless I am well prepared.

Mr Tindi said that Lesson Study is the essence of CPD, a practice that teachers develop competence in throughout their careers, and he emphasised the importance of teachers constantly asking themselves how they can improve their teaching. Once teachers have this mindset, they will be able to respect the suggestions of outsiders as advice that will lead to improvement.

The most important perspective in accepting input from others is to realise that you are not perfect. When you are aware that there is always room for improvement, the opinions of others will come

in, which can show that one seems to have read something different. This spirit is very important in improving lessons through Lesson Study.

Teachers learning together

Lesson Study has brought about an environment in which teachers can easily consult with each other in schools. Ms Kasonde, school head of Kalonga Secondary School, said that ‘previously, some teachers would skip units they could not teach or ask other teachers to take over, but Lesson Study allows teachers to learn from each other and fill in gaps in their knowledge’. She added that the teachers’ confidence in their subject contents through Lesson Study has led to the pupils’ improved performance and given teachers the vitality to overcome the effects of COVID²³ from 2020.

The Zambian syllabus contains a very large number of units. On the other hand, teachers are not bright in all units; they may have matching interests in one or two units and be able to teach them very well, but if they are not comfortable with some contents, their fear will transfer to the pupils, and ultimately their learning will be stunted. So we must grow. My weaknesses are not necessarily weaknesses for other teachers. Their continuous interaction through Lesson Study allows teachers to learn from their colleagues and improve their own abilities. They can then teach with confidence the subject matter they have had difficulty with and, as a result, improve their pupils’ academic performance.

For example, at Kalonga Secondary School, the science pass rate was around 67% in 2017, when I arrived; to 86% in 2018; and finally, to 91% in 2019. In other words, results began to change as teachers became more involved in their assignments. This was the result of teachers’ professional development through Lesson Study and the strict review of their discipline. Last year, however, COVID-19 prevented pupils from attending school for a while, and their grades dropped. Therefore, we held meetings and united with the teachers in the belief that ‘we can do it, and we must do it’. Teachers experienced improvement by changing themselves, and this experience has given them confidence in this situation.

Many teachers have noted that delusion about the content of textbooks when developing lesson plans can cause lessons to deviate from the content of the national examinations, which are developed according to the syllabus. Through Lesson Study, many teachers have noticed

²³ The impact of the COVID, besides the direct impact on Pupils’ learning due to the long closure of schools, was the decline in activities due to the cancellation of all meetings and the inability to conduct in-school training, workshops, monitoring, etc.

inconsistencies in the textbooks they use and stressed the need to improve them. Mr Mulenga, a teacher at Mwayasanka Primary School in the Central Province, was one of those who understood the importance of syllabus-based lesson planning.

Most schools did not have a syllabus in place, and perhaps the administration did not understand its importance. As a result, they were teaching contents that were not on the syllabus. Planning only using textbooks without referring to the syllabus leads to teach unnecessary things. The Examinations Council of Zambia would develop exams according to the syllabus, but we were not aware that teaching did not follow the syllabus.

Changing pupils' learning

Many teachers cited the change in pupils' learning as the reason for continuing to practise the learner-centred lessons introduced in Lesson Study. Some of these teachers noted the actual improvement in pupils' grades as a reason, but many said that the change in pupils' attitudes and their active participation help them to retain knowledge. Ms Kapumpa, Deputy Head of Mwayasanka Secondary School in the Central Province, said, from her experience, that the improvement in pupils' performance through the use of a learner-centred approach has motivated her to continue Lesson Study.

I still remember the confidence I gained from utilising the learner-centred approach I learnt in the project as 40 of my 47 students passed their exams in my subject. It was a great accomplishment for my school that had just opened its Grade 8 and 9 of lower secondary (basic school) to have this number of pupils pass the exam. The results were so well received that I was promoted to secondary teacher. I have been using it ever since.

Mr Phiri, lecturer at the Malcolm Moffat College of Education, said that using a learner-centred approach encourages pupils' participation in the classroom and that Lesson Study has been embraced by many teachers who find it rewarding in their teaching.

Many teachers say that since they started using this approach, their classes have become more active, not least because children who were introverted are now able to present their opinions and impressions of the lessons in front of others during group work. I suspect that all teachers now embrace the learner-centred approach.

In Zambia, teachers use English in Grades 5 and above, but teachers claim that many pupils do not understand English even in Grade 7. On the other hand, it was noted that group work in the

learner-centred approach can improve the pupils' learning – especially those with learning difficulties – because they can teach each other in the group in their local languages.

In learner-centred teaching, pupils are encouraged to explore more deeply and to do more than the teacher planned. Even pupils who are slow to understand can make progress by learning from their friends in the local language. Being in a group setting, pupils feel free to learn on their own.

In the learner-centred approach, pupils are asked to formulate hypotheses and prove them through experiments, which helps them consolidate their knowledge of what they have learnt, as the deputy head of Mwayasunka Secondary School and the practice teacher in a teacher's college described:

Instead of just being taught something and believing that it is what the teacher said, learner-centred teaching allows the pupils themselves to solve another problem with similar ideas. This in turn deepens their understanding. I believe that the learner-centred approach helps pupils learn through experience: they do not forget what they learn by doing, but what they learn by listening often disappears. Providing learners with learning by doing allows them to retain their knowledge.

I believe that most pupils' learning has improved by using this method. We have seen an increase in the number of pupils who look forward to class by asking what they will learn each day as we involve them. This is because the lessons are unique and creative, unlike anything before. However, it is not something that will change in a short period of time. I believe that lessons are gradually changing as this kind of practice is conducted in schools. Pupils are deeply involved and never forget what they have learnt.

From the pupils' point of view, they are also appreciative of the learner-centred approach. For the pupils in the schools where Lesson Study is being implemented, learner-centred teaching is so routine that it is difficult for them to judge its advantages over teacher-centred lessons. However, a female student at the STEM school in the Southern Province where the Lesson Study has been implemented since Phase 3 compared her primary school lessons with those of her current school and said that the participatory lessons and group work help her consolidate her knowledge.

In primary school, basic knowledge was taught in classes. However, now it is different. There are opportunities to go deeper into specific topics and lessons. I find that actually observing and experimenting helps me remember. Groups are a learning opportunity because I think that if you explain something to someone, it's hard to forget it. If other students don't understand something, we can break it down, explain it to them and help them understand. We can also learn better by

explaining to others.

In addition, the narrative of the following male student who also attends the same STEM school and hopes to work in the field of chemistry in the future indicates that his teachers are using the students' existing knowledge in lessons to promote knowledge retention. Furthermore, depending on the content, the student said that he could go beyond the teachers' knowledge, suggesting that the teachers here are willing to learn from the students as well and motivate them to learn.

In lessons at this school, teachers ask students what they know about the topics covered in class. This allows us to express our own opinions. The teachers correct and supplement what we already know. Here in class, we gain a deeper understanding of what we are learning. This is because we feel that by answering the questions that we are asked, we can sometimes go beyond what the teacher knows, so I like to fully understand the content and theories in the books. I feel that the teachers provide lessons with international standards.

Teachers' dilemma

In learner-centred teaching, teachers are required to spend a lot of time preparing a wide variety of materials and experiments so that pupils can learn on their own. Ms Kasonde, head of a secondary school, said 'Teachers sometimes want to return to the traditional teaching (Chalk & Talk) to cover the syllabus. They still have mixed feelings'. She also explained that teachers do not have to use this method in all units, but it is necessary to involve the pupils as much as possible in regular lessons.

The burden on teachers in the learner-centred approach is a major obstacle to its implementation; however, Mr Phiri, lecturer at the Malcolm Moffat College of Education, explained that his participation in an international workshop in Uganda and lectures by a Japanese expert influenced his mindset as follows:

When I visited Uganda, Dr Matsubara told me 'Your syllabus is similar to the Japanese one'. He asked me, 'Why do Zambians say that the syllabus is too much for the learner-centred approach? That's because pupils are repeating what they learn rather than building on what they already have learnt'. In other words, in Zambia's syllabus, units learnt in Grade 8 are taught in Grade 12 with more content; if you are teaching Grade 12, you should start with what was learnt in Grade 8, but if the pupil has not acquired that knowledge, you have to start from scratch, for which there isn't enough time. You are wasting time by learning repeated content from scratch every time.

Our curriculum is spiralling. This has changed my brief dramatically. By focusing on what is left for the pupil rather than just finishing the curriculum and having nothing left, we can increase our efficiency by avoiding repeating what has already been learnt.

As mentioned above, at the school where she was assigned, Ms Kasonde said that the introduction of Lesson Study had improved the pupils' performance, but at the time she had begun the learner-centred approach, she had faced a dilemma, namely that pupils could not get better results. She explained the process to overcome this dilemma by giving them the necessity to learn as follows:

I come from a traditional way of teaching primary and then entering secondary. At the time, I started learning about learner centredness in projects where I was exposed to this kind of teaching. At the beginning, learner-centred teaching feels good. You would go to class, and you know, the children would clap and said, 'teacher did good.'

But, come the exams, children fail. Then you ask yourself what is wrong. I'm a very good teacher. I teach well, and I articulate issues before the children very well. I give them notes. Where is the problem? So, when I started adopting the learner-centred approach, I realised that it is not about me as a teacher. After all, the one who is learning is a learner I know already, but can I translate this learning to this learner? And [I realised] how it was by involving the learner. And when I start involving the learner, of course the temptation to take over is there because you're coming from where you know you have to give everything. This is a mind that is slowly opening up and you feel like they are wasting time. Why can't they? So you also have to exercise patience with the learner.

That one helped me, and I realised I needed to challenge towards learners. I started giving assignments to them – not only for the class – so that even when they went home, they researched and presented to their friends, and my work became easier. One of my learners stopped complaining because they knew they had to study. They had to understand for themselves that they would have to come and teach their friends. So I engaged the learner by saying 'okay, this is our assignment, which you have to do and present to your friends'.

Motivation for the continuity of Lesson Study

The institutionalisation of CPD by the central government through the establishment of the Teaching Council of Zambia functioned on the ground. Mr Phiri started to practise Lesson Study when he was a secondary teacher in the Copperbelt. At that time, he was motivated by the fact that he can earn credits for promotion by participating in Lesson Study under this institutionalised

CPD. However, after realising the benefits of Lesson Study and the necessity for personal growth, he suggests that the intrinsic motivation has affected him to continue the activity.

The lady from the Provincial Resource Centre told us that the so-called credit system has been established, whereby participants can earn a certain number of points if they participate in facilitator workshops and other activities. This has led to more active Lesson Study. She also mentioned that she could issue some sort of certificate and told us that those who actively embraced Lesson Study would be eligible for promotion. In a way, we were motivated to participate in these programmes based on the notices sent to us from the District Education Board Secretary (DEBS). But then, through a series of workshops and meetings, we began to realise the importance of Lesson Study. Promotions and advancement should be secondary. What is important is to improve oneself professionally.

In addition to teachers' credit under institutionalisation of CPD, several schools have provided other incentives, such as awarding teachers who devise excellent teaching materials through Lesson Study and prioritising training opportunities for teachers who are enthusiastic about in-school training. Nevertheless, Ms Kasonde points out that intrinsic motivation is only important for the sustainability of Lesson Study as follows:

Not long ago, we used to offer drinks to motivate teachers during Lesson Study, but teachers would practise without giving anything. With extrinsic motivation, the activity often does not continue, but their motivation is within themselves, and they are able to sustain it, so I stopped offering them drinks. I do not want Lesson Study or in-school training to be tied to these things. I want them to know, as I did, that developing themselves is ultimately what motivates them.

Demonstrating the impact of Lesson Study

The project conducted an impact survey using the national exam results at the end of Phase 2 and Phase 3, and the quantitative impacts of the Lesson Study were widely disseminated to Zambian educators and used as advocacy materials for the national rollout of Lesson Study. The impact survey conducted in Phase 2 compared the pass rates in maths and science in secondary schools in the Central Province, which was the target area for Phase 1 and Phase 2, with the pass rates of the other provinces. The report showed that performance in the Central Province, which was below the national average prior to project implementation, was significantly above the national average in 2009, 3 years after implementation. In addition, a survey conducted at the end of Phase 3 reported improved national exam results in the Central, Copperbelt and Northwest Provinces, which were the target sites from Phase 2.

In addition, the World Bank's project ZEEP, which began in 2018, is implementing teacher capacity building using the SPRINT framework as 'quality improvement for teaching and learning'. The project targets 300 schools²⁴ (200 primary schools and 100 secondary schools) and 82 newly established schools nationwide, including many lecturers of teachers' colleges supported by the JICA in Phase 4 and facilitators from each province that participated in the Lesson Study project. In July 2020, the mid-term evaluation of ZEEP was conducted using a quasi-experimental model. A comparison of the results of the study at baseline (2018) and at mid-term in the target schools (100 secondary schools) and non-target schools (50 secondary schools) confirmed that secondary students improved in maths and science. Thus, the impact of Lesson Study has been quantitatively demonstrated, confirming that its effect on pupils' learning is widely recognised by those involved from the MoE²⁵.

Remaining issues about pupils' learning

While Lesson Study has demonstrated its effects on pupils' learning among individual teachers and schools, no evidence of its effects on pupils' achievement in Zambia as a whole can be confirmed. In addition, as Dr Nakai points out, 'it is impossible to link Lesson Study alone to pupils' achievement' in the midst of demands for the concrete impact of the 15-year support to Lesson Study, and the narratives from those involved as well as reports confirm that many factors influence this impact at the national level.

How many teachers actually practise Lesson Study in Zambia? The TESS in the MoE, which has taken over the project, has compiled an annual report stating that 56% of public primary and secondary schools across the country had implemented Lesson Study in 2021. It should be noted that this figure does not include private schools and community schools. Furthermore, the annual report noted a decrease in the implementation rate due to the ban on in-school trainings and workshops as well as in monitoring opportunities in schools due to COVID-19 since 2020. On the other hand, after the completion of the national rollout of Lesson Study (Phase 3) in 2017, the survey of the PISA (Programme for International Student Assessment) for Development conducted in Zambia showed that 65.5% of randomly sampled secondary teachers nationwide had participated in training and workshops on teaching methods, with 34.8% saying that they had participated in CPD activities, and 39.9% of teachers had participated in in-school training or

²⁴ Schools with low performance were selected from across the country based on the results of national examinations from 2014 to 2016.

²⁵ Zambia Education Enhancement Project (ZEEP) Midline Survey (Preliminary Findings) (2018). In particular, an improvement in mathematics was noted. On the other hand, inadequate laboratory facilities and delays in distributing teaching materials were pointed out with regards to science.

classroom observation organised by their schools. The report of PISA concludes that the limited number of teachers who participate in CPD activities is one of the main impediments to pupils' learning in Zambia.

Teacher retention also affects the practice of Lesson Study. Teacher turnover is high, with approximately 10% of primary teachers leaving the post each year, and there is a strong perception that teaching is an unattractive profession. Ms Muzona, the Province Resource Centre Coordinator in Lusaka, points out that the biggest challenge in disseminating Lesson Study is the retention of trained teachers, explaining the situation in community schools, which are about 3,000 across Zambia:

Most teachers in community schools are neither educationally trained teachers nor government employees. They work as teachers but are not paid by the government. This increases the likelihood that they will become frustrated and leave their schools. And even if we provide them with training on Lesson Study, if they leave the school, the training will be in vain. Another new teacher comes in, knows nothing about Lesson Study and does not practice it.

The District Education Board Secretary in Chibombo said that poverty, child labour, pregnancy of female students and absences due to childbirth have a significant impact on pupils' performance and the results of national examinations in the Central Province, especially in rural areas. Against this background, a system has been established in rural areas that allows children from poor families to engage in household chores for a certain period of time or to return to school after the maternity leave of female students. In addition, school meal projects supported by donors have been implemented to improve pupils' absenteeism. The person in charge of in-school training at Chibombo Primary School also indicated that attendance has a significant impact on pupil performance, and the free education programme under the new government may contribute to improving the situation.

Improved teaching will also enhance the learners' performance. However, pupil attendance is a major factor in the results of the national examinations. First, this is because even if classes are improved, if pupils do not attend, they will go into the examinations without understanding the units that will be on the examinations. Unfortunately, Chibombo District is particularly challenged by low pupil attendance. Attendance is also affected by the economic situation in the area. For example, some pupils take time off from school to catch caterpillars (larvae of edible insects) to pay for their own school fees. However, we hope that this problem will soon be resolved. The new

regime has promised free education²⁶, so they will not have to work to pay for it. After the declaration of free education, most schools are bringing back many pupils who had quit some time ago. Sometimes we even have to tell older pupils to shave so that they are appropriate for school age.

The MoE prepared a project document for the dissemination of the IPeCK model established in Phase 4 and designated the 4-year period from 2020 to 2023 as the IPeCK Phase 2 with a plan to introduce collaborative activities through Lesson Study with surrounding schools in the remaining nine teachers' colleges. However, progress on this plan²⁷ has stalled due to the COVID-19 pandemic. Ms Kasonde, a secondary school head, stated the following about the need to strengthen support for teachers' colleges:

Lesson Study has been introduced at teachers' colleges, but it is not yet on the board, and college instructors' training needs to be strengthened. Unlike teachers who practice Lesson Study in secondary schools, many new teachers with degrees still think that they have to give logical explanations to pupils when they come to the field. Frankly, I do not know where to begin to address the mindset of newly graduated teachers with this kind of thoughts. I feel the need to change the teaching method at the college level.

²⁶ Even before the announcement of the free education, primary school was basically free, but government subsidies were not sufficient, and parents had to pay contribution such as PTA fees. Some public secondary schools also charge high tuition fees that parents cannot afford.

²⁷ Part of the plan is being implemented by the World Bank project ZEEP albeit in different form than originally planned.

Chapter 6: Conclusion (Researcher's Perspective)

As noted in Chapter 1, CD-type assistance emphasises on the ownership of developing countries (intrinsic motivation) to address development challenges on their own. It also focuses on strengthening of diverse elements, including not only individuals and organisations but also the institutions, policies and social systems that support them.

We are even likely to take the influence of superior force for control, forgetting that while we may lead a horse to water, we cannot make him drink; and that while we can shut a man up in a penitentiary, we cannot make him penitent.

Dewey, John 'Democracy and Education'

Dewey was an educator-researcher who advocated the 'learner-centred approach' that was also introduced in Zambia's Lesson Study project. As Dewey states, the principle of internal motivation, which is the key concept of CD, has high affinity with the educational theory of Lesson Study introduced in Zambia, in which the teacher's role is that of a facilitator based on 'constructivism', where lessons are created based on concepts that have already existed in pupils. This corresponds to the relationship between the donor and recipient countries in CD-type assistance.

Dr Nakai emphasised the counterparts' 'trial-and-error process' in this project supporting CD. He said, 'I worked more like an educator rather than a project expert', and his statement that 'what the pupils learnt was more important than what the teacher finished the syllabus' is in line with the perspective of Lesson Study (learner-centred approach).

Through project formation and implementation, teachers in the life story interviews, as well as the counterparts, repeatedly learnt about Lesson Study and the learner-centred approach from third-country training and from Japanese experts. In other words, they learnt not only individual skills and knowledge but also the importance of constructivism and intrinsic motivation which are the key concepts of CD, and through the trial-and-error process in the field, they understood the importance of ownership and sustainability from CD. The CD concepts gained by individuals then spread to organisations such as counterparts' offices and schools, and 'learning organisations' that shared the vision were formed mainly in schools.

To support these individuals and organisations, external environments such as promotion systems, organisation and institutionalisation of Lesson Study were necessary. These were developed by counterparts who recognised the importance of CD support, thereby securing the

foundation for long-term results, such as pupils' learning, as discussed below.

With regards to the relationship between Lesson Study and pupils' learning, teachers believe that the former improves the latter, which motivates them to maintain Lesson Study. One reason for the impact on pupils' learning is that the mutual learning among teachers through Lesson Study improves their skills and knowledge. The second is that pupils' active learning in the learner-centred approach helps them consolidate their knowledge. For Japanese people who are not familiar with education in Zambia, the logic that Lesson Study has an impact on pupils' learning seems a bit of a leap. However, observing pupils being left behind in Zambia's conventional lessons 'Chalk & Talk', we understand why many teachers talk about the effectiveness of Lesson Study. In addition, the narratives of those involved show that teachers' teaching skills and pupils' academic performance are particularly low, especially with regard to maths and science, and that teachers' growth through Lesson Study directly impacts pupils' performance.

On the other hand, with regards to the question of whether the 15 years of support have produced a change in pupils' performance in Zambia as a whole, no evidence can be confirmed. As mentioned above, Lesson Study has produced positive effects, but only about half of the schools (56% in 2021) have implemented it; in addition, many other factors, such as the content of national examinations, the worsening economic situation and educational policies, affect pupils' learning.

Achieving tangible results, such as improved pupil performance in the education sector, does not mean that the development agenda has been accomplished, and even if some goals are achieved temporarily, if this is the result of donors filling in gaps, the effects will not be long-lasting. The important point for these projects is that Zambians themselves have acquired the ability to continue and improve their activities through CD support. Even if the 'learner-centred approach' was introduced in Japan, pupils were ridiculed as they did not have 'academic ability' nor 'crawling empiricism', and teachers in Zambia are facing the same dilemma. To realise this approach, teachers must deepen their research on *kyouzai-kenkyu* and their approach to PCK and push forward with reforms by becoming aware of their own accompanying issues such as curriculum, textbooks and assessment. This 'awareness and action', therefore, will truly improve pupils' future learning.

The 'awareness and action' of counterparts is not visible from the linear logic described in the PDM, 'Lesson Study is conducted (Activity)'-'Teachers' ability is improved (Project Purpose)'-'Pupils' performance is improved (Overall Goal)', even though it is important to truly achieve the Overall Goal. Our former teacher counterparts and Japanese experts can witness this first-hand. Their concern is that if we focus only on the logic or Overall Goals in PDM, we may end up without the process that is

essentially necessary, which in turn wastes our own resources and does not lead to the pupils' future learning. To compensate for such limitations of PDM in development projects, it is important to develop a theory of change (ToC) that describes the path from activities to expected results and the tentative assumptions on which the path can be established. Understanding ToC from completed projects could also make them more flexible with appropriate changes of PDM.

This research using project ethnography shows us that counterparts' thoughts and beliefs are shaped by a number of overlapping conditions, including the country's situation and how the individual engages with those conditions. It can also be seen that the background to the acceptance of this project's CD assistance in Zambia includes a backlash against colonial education and Western-style aids in the country. At the same time, the ups and downs of Zambia's resource-dependent economy has also affected its government, as well as the Ministry of Education, teachers and pupils. For Zambians, the importance of the acquisition of non-cognitive skills through the promotion of the learner-centred approach to break away from resource dependence and to promote new employment or entrepreneurship may be more strongly recognised than in Japan.

Finally, what our counterparts repeatedly emphasised in this survey was that they do not want Japan to impose successful models from other countries for short-term results that may undermine ownership, the foundation of CD. I believe that this is the reason why they fully cooperated with this survey and that this is an opportunity for us to reaffirm this fact.