

Summary of Final Evaluation Report

1. Outline of the Project		
Country: Republic of Malawi		Project title: Project for Strengthening of Mathematics and Science in Secondary Education (SMASSE) in Malawi
Issue/Sector: Education		Cooperation scheme: Technical Cooperation
Division in charge: Human Development Department		Total cost: 225 million yen
Period of Cooperation	(R/D): 2013/6/5-2017/8/11	Partner Country's Implementing Organisation: Ministry of Education, Science and Technology

1-1. Background of the Project

The Government of Malawi (GoM) introduced Free Primary Education in 1994, which rapidly expanded access to primary education, and then secondary education, in Malawi. However, the quality of education in Malawi still faces numerous challenges: a lack of qualified secondary teachers; an imbalanced allocation of teachers among government schools, community day secondary schools (CDSS), and private schools; and low Malawi School Certificate of Education (MSCE) pass rates. To improve the quality of education, the GoM requested the Government of Japan (GoJ) to implement a series of technical cooperation projects, SMASSE Phase I (2004-2007) and SMASSE Phase II (2008-2012). Both of these Phases aimed to assist in the development of Malawi's INSET system at the national level. Although the Terminal Evaluation of SMASSE Phase II in 2012 witnessed successful achievements, there remained significant challenges in improving the teaching capacity of the majority of underqualified teachers and increasing the number qualified teachers that know how to use practical methodologies. Thus, the Japan International Cooperation Agency (JICA) and the Ministry of Education, Science and Technology (MoEST) of Malawi, started its four-year project called "Strengthening of Mathematics and Science Education in Malawi" that aims to disseminate and sustain the outcomes of Phase II. These include implementing high quality INSETs based on teachers' needs and implementing practical methodology trainings for undergraduate students (trainees undergoing teaching practices) in PRESET (teacher training institutions).

1-2. Project Overview

The Project aims to improve the quality of mathematics and science education at the secondary school level in Malawi through SMASSE methodology trainings in the targeted subjects, which are then improved upon through SMASSE's action research that is being conducted at pilot schools. The lessons learned from the action research are then fed back and incorporated into INSET and PRESET courses. Additionally, the Project aims to strengthen the INSET's institutional system. In order to reflect the knowledge and skills gained by the teachers (participants) from INSET back into their lessons, the Project attempted to implement action research and properly assess student comprehension and scholastic achievements. Additionally, the Project introduces the SMASSE approach to teacher training institutions/colleges and attempts to improve the quality of new teachers at the undergraduate level.

1. Super Goal

Students' achievement in secondary mathematics and science is improved in Malawi.

2. Overall Goal

The quality of teaching mathematics and science is improved in secondary schools in Malawi

3. Project Purpose

The teachers in secondary mathematics and science education in Malawi apply skills and knowledge acquired through INSET and PRESET to their teaching.

4. Project Outputs

- (1) Quality INSETs for secondary mathematics and science teachers are provided.
- (2) A sustainable INSET management system is strengthened.
- (3) The SMASSE approach is incorporated into the PRESET programme.
- (4) Action research and good practices of teaching and learning are carried out at pilot schools to improve the quality of INSETs and PRESETs.

5. Input (at the time of evaluation)

Japan: Total 225 million yen

Number of long-term experts: 4

Number of short-term experts: 4

Number of trainees received: Japan 55

Third Countries 43

Equipment: 7.6 million yen

Local cost: 36 million yen

Malawi:

Number of counterparts: 28

Offices and facilities provided: Project office (DTED), National INSET Centre (DCE),

Divisional INSET Centres (19 Secondary Schools)

Local cost: MoEST 188 million MK, Schools 110 million MK (estimated)

Total 298 million MK

2. Evaluation Team

Evaluation Team Members	Mr. Atsushi Matachi	Leader (JICA HQ)
	Dr. Masato Kosaka	Cooperation Planning (JICA HQ)
	Ms. Mari Naganuma	Cooperation Planning (JICA USA Office)
	Ms. Yoko Takimoto	International Development Solutions Inc.
Evaluation Period	2017/1/30-2017/2/23	Evaluation Type: Terminal Evaluation

3. Evaluation Results

3-1. Project Performance

1. Outputs

(1) Output 1. Quality INSETs for secondary mathematics and science teachers are provided:

Partially Achieved.

【Indicator 1(a)】 INSET programme is developed using findings of M&E and action research every year.

【Indicator 1(b)】 INSET write-ups are developed by involving other stakeholders such as PRESET institutions and Divisional Trainers.

【Indicator 1(c)】 Opportunities to address needs of Divisional Trainers are increased.

【Indicator 1(d)】 Teachers' subject content knowledge measured at National and Divisional INSET are increased.

INSET Programmes were developed every year except in 2013/14. However, due to the delay of activities in Output 4, action research findings were only used in the last 2 years. INSET write-ups (training materials) were developed primarily by the National Trainers at DTED, MoEST, and the National Trainers at DCE. The INSET write-ups were also developed with the assistance of Divisional Trainers (2016), EDO Inspector (2015), and Chancellor College (2016). Although the capabilities of the Divisional Trainers were strengthened by various inputs like counterpart training in Japan and ToTs, the actual implementation of ToT was conducted less frequently than was originally planned. The subject content knowledge of the participating teachers, which were measured at the National and Divisional INSETs, showed increases every year after the National and Divisional INSETs to place. The teachers scored better in the post-INSET tests than in the pre-INSET tests.

(2) Output 2. The sustainable INSET management system is strengthened.

Partially Achieved.

【Indicator 2(a)】 SMASSE National INSET budget is secured sufficiently and disbursed timely.

【Indicator 2(b)】 SMASSE Divisional INSET budget is disbursed to Divisional INSET Centres timely.

【Indicator 2(c)】 National and Divisional INSETs are conducted every year.

【Indicator 2(d)】 75% of all secondary mathematics and science teachers attend Divisional INSETs.

【Indicator 2(e)】 National and Divisional INSET reports are submitted after each INSET.

【Indicator 2(f)】 Manuals for school administrators on their advisory roles at schools are developed.

The budget for SMASSE has been incorporated in the reoccurring budget of the Malawian Government. Therefore, the INSET budgets have been successfully secured and executed 3 out of 4 times, even during periods of severe fiscal conditions in the country. The project implemented

the National INSET and Divisional INSET 3 out of 4 times. Although the number of participants attending the Divisional INSET did not reach 75% in the last 2 years, 78%(2013), 73%(2015) and 68%(2016), the actual number did increase year by year. The National and Divisional INSET reports were submitted after each INSET, but there was some missing data. The manuals for school administrators on their advisory roles have not been developed yet, which means that there have been delays in implementing this aspect.

(3) Output 3. The SMASSE approach is incorporated into PRESET programme.

Achieved.

【Indicator 3(a)】 ASEI/PDSI approach is redefined in the Malawian context (challenges teachers face in classrooms).

【Indicator 3(b)】 The redefined ASEI/PDSI approach is incorporated in mathematics and science education syllabus, regarding teaching methodologies, at DCE and Chancellor College

The ASEI/PDSI approach was redefined in the Malawian context primarily by Chancellor College through their implementation of action research. The ASEI/PDSI approach was incorporated in the mathematics and science education curriculums at DCE and Chancellor College of UNIMA.

(4) Output 4. Action research and good practices in teaching and learning are carried out at pilot schools to improve INSET and PRESET.

Achieved, but delayed.

【Indicator 4(a)】 The results of action research are compiled.

【Indicator 4(b)】 Elements of ASEI to be incorporated in the INSET curriculum are identified at least one for each subject.

【Indicator 4(c)】 A forum for mathematics and science secondary school teachers and for teacher educators is organised.

The results of action research were compiled in papers that were presented at the SMASSE Mid-term Action Research Conference. However, there was a delay in implementing these activities in the early stages of Phase 3, which resulted in limited feedback to improve the quality of SMASSE INSETs through Output 1 of the Project. Elements of ASEI to be incorporated in the INSET curriculum were identified at least one for each subject. In addition, the cost of action research is borne by JICA and it has not yet been determined how the research activities will be sustained by the Malawi side.

2. Achievement of Project Purpose

Project Purpose: The teachers in secondary mathematics and science education in Malawi apply skills and knowledge acquired through INSET and PRESET to their teaching.

Not Achieved, but progress has been made.

【Indicator 1】 Secondary mathematics and science lessons sampled nationally obtain a mean score of over 2.5 on a scale of 0 to 4 in the ASEI/PDSI Index, administered by the Project Monitoring and Evaluation (M&E) Team.

The latest result of a lesson observation conducted using the ASEI/PDSI checklist (2016 in SWED and NED) was scored a 2.15 out of 4. This was below the targeted indicator of 2.5, so the latest score did not reach the target value of the indicator. It is assumed that the delay of activities in Output 4 caused a delay in reflecting the findings of the action research to feed them back into the training curriculum. Consequently, the Project could not adequately fill the gap between the knowledge and skills acquired through the INSET and apply them to classroom settings.

3-2. Summary of Evaluation Results

(1) Relevance: Relatively High

- The Project is consistent with Malawi's national policies, like the MGDS II (2011-2016), which is Malawi's current national development strategy. SMASSE is also stated as one of the national policies in ESIP II (Policy 3.3 Teacher Training) and in the NESP (2008-2017). The Project is relevant in assisting basic education services within Japan's Medium-Term Policy on Official Development Assistance, the Action Plan for TICAD V (2013-2017); BEGIN (Basic Education for Growth Initiative (2002), a Japanese ODA education initiative; and the Country Assistance Policy for the Republic of Malawi (Ministry of Foreign Affairs in Japan).
- As a result of the Free Primary Education policy, it was relevant to target secondary education to respond to the growing needs of improving quality of secondary education as a result of the increased enrolment at secondary schools. Targeting mathematics and science subjects were relevant because these are subjects that are perceived to be difficult among secondary school teachers, as well as by students. Targeting in-service training was relevant because there is no other structured in-service training for secondary school teachers in Malawi. Targeting pre-service training at PRESET institutions was relevant, since students who are currently studying to become teachers will be familiar with SMASSE approaches and therefore be able to promote student-centred teaching and learning processes in their classrooms upon graduation.
- Action research was relevant for the INSET trainers to grasp issues on the ground and fill skill gaps that exist within INSET's cascading training system. It was also relevant for the teachers to become more skillful at practicing ASEI/PDSI teaching methods at their schools. The pilot schools were selected based on criteria agreed with counterparts.
- Given both the differing skill levels among INSET Divisional Trainers, and the difficulties of practicing what the participants have learned in their lessons, it was determined that conducting cascading trainings alone is insufficient to improve teaching practices. Strong support systems that allow teachers to repeatedly apply what they have learned through the INSETs in their own classrooms are also necessary.

(2) Effectiveness: Moderate

- Although the Project did not meet the targeted value of the Project Purpose indicator (the score was a 2.15 out of 4, which was below the Project's targeted value of 2.5), necessary consideration was taken regarding external factors that severely impacted teachers, including the drastic increase of learners (38% increase from 2012) as a result of the improved access to secondary education in Malawi. Also, it is likely that the outcomes of the INSETs have been met, because the INSET write-ups were highly appreciated by teachers and underqualified teachers were able to gain mastery of their subjects through INSETs. Moreover, the ASEI/PDSI Index has improved steadily since 2009 (1.1), 2010 (1.7), 2011 (1.8), 2015 (1.92), with the sharpest level of improvement in 2016 (2.15). Therefore, the team concluded that the achievement of the Project Purpose was "moderate".
- While there are no logical inconsistencies between the outputs and the Project Purpose, students in the teacher training institutions (PRESET) who studied under the new curriculum (Output 3) have yet to become teachers since the activities were delayed (therefore, they have not been evaluated by the ASEI/PDSI checklist in the M&E of the Project). As a result, either the indicator or the Project Purpose had to be revised when the PDM was updated in May 2016.

(3) Efficiency: Moderate

- Although the counterpart trainings conducted in Japan and third-party countries were appropriate, some counterparts requested one additional math and science subject-based expert from Japan. From the Malawian side, there was a period (one year) where there were insufficient numbers of National Trainers in the Secretariat because of delays in assigning newly recruited National Trainers. Also, the budget was not executed for some activities to secure the quality of INSETs.
- The Project could not achieve all of its Outputs, or meet all the evaluated indicators, because the INSETs were implemented only 3 out of 4 times, and the budget was not executed for some important activities. However, the fact that the GOM executed the National and Divisional INSETs three times when the country faced severe financial conditions was given significant weight during the evaluation process. In addition, most schools sent their teachers to INSETs using the schools' daily allowances. The 5 day training sessions have been efficiently managed by each education division office and the 19 INSET Centres, and the INSET system has almost fully integrated in Malawi. Additionally, by streamlining the disbursement of the budget to the Divisional INSET Centres since December 2015, it enabled each Centre to buy necessary snacks and drinks for training activities from their local vendors, which also contributed to the Project's efficiency. Furthermore, the use of existing secondary schools with dormitories (hostels) to house trainees for the INSETs also enhanced the Project's efficiency.
- On the other hand, it is necessary that the drastic increase in the number of teachers (an increase of 34% from 2012) is considered an important assumption that likely caused various limitations in schools, in addition to a reduction in the number of participating teachers at the INSETs. Therefore, the team concluded the Project's efficiency to be "moderate".

(4) Impact: Cannot be evaluated quantitatively at this stage, but many positive outcomes were observed.

- The Evaluation Team cannot properly assess Indicator (a) The degree of attitude change (in teaching) of secondary mathematics and science teachers assessed by: (i) secondary mathematics and science teachers, (ii) secondary school head teachers, and Indicator (b) Secondary mathematics and science lessons sampled nationally obtain the mean of 2.5 or better on the scale of 1 to 4 according to the National Education Standard, due to a lack of data. It also cannot be determined that the Super Goal and the passing rates of JCE and MSCE are “improving.” The passing rates were higher in 2015 compared to 2012 (before the project started), so there is a possibility that the Super Goal can be achieved.
- Regarding the quality of lessons, there is a possibility to achieve the Overall Goal because the INSET write-ups are highly appreciated by teachers and underqualified teachers have gained mastery of their subjects by the INSETs. The improvement of teachers’ subject content knowledge is exemplified by the post-INSET tests.
- In addition, the Project observed various other positive impacts. First, some teachers in subjects other than mathematics and science also began to apply the SMASSE approach to their lessons. Additionally, other educational institutions, such as Muzuzu University and Polytechnics College in the University of Malawi, started to incorporate SMASSE approaches (ASEI/PDSI) into their curriculums. Furthermore, ASEI/PDSI-based lesson studies have also begun to take place as part of CEED’s Cluster and school-based in-service trainings. An effective model for collaborative lesson planning among science teachers is also being created through action research through the support of Chancellor College.
- However, some measures to help teachers apply their skills and knowledge in the classroom are still necessary to achieve the Project’s Overall Goal and Super Goal. This is because the cascading INSET system alone is may not be enough to get teachers to apply a learner-centred approach in their classrooms.

(5) Sustainability : Moderate

- The sustainability of the Project in Malawi’s education system is implied through policies within ESIP II (2013/14-2017/18) and NESP (2008-2017) that incorporate SMASSE approaches. In addition, it is probable that the motivation of teachers to participate in SMASSE INSETs will continue because the SMASSE certificates are being recognised as one of the requirements for promotional interviews to become heads of mathematics and science departments at secondary schools. However, there are still some ongoing challenges: 1) the number of inspectors at EDOs is not enough to assist or motivate teachers to improve their lessons; and 2) the Director position at DTED has been vacant for a long time and may cause a delay in making decisions and securing/executing budgets.
- As for the financial aspect, although MoEST is highly committed to securing the budget for INSETs, there is no sign that the current budgetary constraints caused by the withdrawal of budgetary support from DP’s will improve. There is also a necessity to secure the budget to continue action research at DTED and Chancellor College. Additionally, it is also a necessity to ensure the timely disbursement

of budgets to maintain the quality of INSETs, including funding for ToT, M&E, and workshops to develop INSET materials.

- As for the technical aspect, the National INSET Centre, DCE, and the 19 Divisional INSET Centres already have demonstrated experience and the necessary capacity to manage INSET activities under difficult circumstances. The National Trainers also have enough knowledge and skills to effectively conduct INSETs.

Since the curriculums at DCE and Chancellor College now include ASEI/PDSI, the sustainability of SMASSE at these PRESET institutions is relatively high given that the curriculum will be used by all their students. Regarding the sustainability of INSET materials that are developed, write-ups can be utilized for all mathematics and science teachers, because it is highly appreciated by teachers. Lesson plans will also be maintained because the SMASSE Lesson Plans has been reflected into the new curriculum (SSCAR).

- However, based on some interviews, it has been revealed that Divisional Trainers have large variations in their capabilities to successfully implement Divisional INSETs. Although the shift from teacher-centred approaches to student-centred approaches has been observed in some schools, some teachers have difficulty in applying the ASEI/PDSI to their lessons. Therefore, further measurements are required to sustain the Project.

3-3. Factors that Promoted Realization of Effects

[Factors concerning the Planning]

- Introducing action research helped to bridge the realities of the classroom with the cascading INSET system. It also synchronized the INSETs that were conducted by the administration and the PRESETs that were conducted by the researchers. Through action research, it was confirmed that it is necessary and effective to secure an opportunity for practicing what teachers have learned from the SMASSE INSET in their daily classrooms.
- The involvement of Chancellor College, in addition to DCE, the long-time counterpart of SMASSE Phase I, was effective to give an impact to other teacher training institutions, such as Muzuzu University and Polytechnic College. It also consolidated the dissemination of learner-centred teaching approaches.
- Dispatching short-term experts and conducting counterpart trainings contributed to enhancing the efficiency of Outputs 3 and 4.

[Factors concerning the Implementation Process]

- The unwavering commitment by MoEST to implement INSETs and the strong communication and coordination between EDOs and INSET Centres, made it possible to implement 3 INSETs under times of severe financial conditions in the country.
- Assistance provided by the WorldBank called, “Skills Development Project,” contributed to Chancellor College’s implementation of Output 3.
- The streamlined budgets disbursed to the Divisional INSET Centres enabled each Centre to buy necessary snacks and drinks for training activities from their local vendors. These changes provided some cost savings.

- The Embassy of Japan in Malawi’s Counterpart Fund helped repair the infrastructure and facilities of some INSET Centres.

3-4. Factors that Impeded Realization of Effects

[Factors concerning the Planning]

- Action research in Output 4 was not designed well enough to ensure its sustainability. To date, JICA has financed the activities in Output 4, which made it possible for the counterpart that is responsible for ensuring the sustainability of Output 4 after the termination of the Project to not be clearly identified.
- The cluster based activities in Output 2 were expected to bridge the gap between INSETs and actual classroom practices. However, there are different levels of activeness among the approximate 100 existing clusters in Malawi. There was no clear design on how the clusters should be utilized to support the INSET mechanisms in Malawi.

[Factors concerning the Implementation Process]

- At the beginning of the Project, the activities in Outputs 3 and 4 were not implemented due to the counterpart’s DSA issues.
- Implementing the Divisional INSET in December resulted in less participation since it conflicted with Malawi’s Christmas holiday. Also, the reality that some private schools and CDSSs did not send all their mathematics and science teachers to the INSETs may have reduced the number of participants.
- Blackouts and water outages at some INSET Centres negatively affected the implementation of some INSETs.
- Although some participants complained about unsanitary sleeping conditions, effective persuasion by EDOs and INSET Centre managers made it possible to overcome these difficulties and finish the programs as planned.

3-5. Conclusion

Based on the results of the evaluation, the Team concludes the following:

- The Project was relevant to the development policy of the Government of Malawi, the ODA policies of the Government of Japan, and to the needs of the education sector in Malawi. However, the cascading training system that is implemented once a year demonstrated difficulties in applying the knowledge and skills gained through the training into the participants’ daily lessons. Thus, the team concluded that the relevance of the Project was “relatively high”.
- Although, the Project did not meet the targeted indicator in the Project Purpose, there was necessary consideration given to other factors like the INSET write-ups being very appreciated by teachers, underqualified teachers gaining mastery of their subjects through INSET, demonstrated improvement in ASEI/PDSI index scores from 2009 (1.1) to 2016 (2.15), and external factors that severely impacted teachers, including the drastic increase of learners (38% increase from 2012) as a result of improved access to secondary education in Malawi. Thus, the team concluded that the achievement of the Project Purpose was “moderate”.
- Although inputs from Japan, including counterpart trainings conducted in Japan and third-party

countries were appropriate, there was a vacant position (one vacancy) that was not filled for a long-term JICA Expert in mathematics and science. Additionally, for approximately one year, there was an insufficient number of National Trainers because of a delay in relocating candidates. Furthermore, there were some budgets that were not executed by MoEST for important activities that help maintain the quality of INSETs. However, the expected outputs were achieved in part because the Government of Malawi implemented 3 out of 4 National and Divisional INSETs and each EDO and INSET Centre efficiently managed the 5 day trainings almost each year. Furthermore, by streamlining the disbursement of the budget to the Divisional INSET Centres since 2015, it has enabled each Centre to buy necessary snacks and drinks for training activities from their local vendors, which has contributed to the Project's efficiency. Furthermore, the use of existing secondary schools with dormitories (hostels) to house trainees for INSETs also enhanced the Project's efficiency. Therefore, the team concluded the Project's efficiency was "moderate".

- Although the Evaluation Team cannot properly assess Indicator (a) and Indicator (b) due to a lack of data, there is still a possibility that the Overall Goal can be achieved regarding the quality of lessons because the INSET write-ups are very appreciated by teachers and underqualified teachers have gained mastery of their subjects from INSET. The improvement of teachers' subject content knowledge is exemplified by the post-INSET tests. Therefore, the team concluded that the impact cannot be adequately measured, but that many positive impacts were observed.
- It is likely SMASSE will be sustained in terms of policy and institution, because the project is recognized within official education sector documents like NESP and ESIP. This makes SMASSE the only institutionalized in-service training in the country, in addition to the fact that the funding for SMASSE is disbursed from a reoccurring budget of the Government of Malawi. As for the financial aspect, there is no sign that the current budgetary constraints caused by the withdrawal of budgetary support from DP's will improve. There is also a necessity to secure the budget to continue action research at DTED and Chancellor College and ensure timely disbursement of budgets to enhance the quality of INSETs, including funding for ToT, M&E, and workshops to develop INSET materials. Furthermore, based on some interviews, it has been revealed that Divisional Trainers have large variations in their capabilities to successfully implement Divisional INSETs. Although the shift from teacher-centred approaches to student-centred approaches has been observed at some schools, some teachers have difficulty in applying the ASEI/PDSI to their lessons. Therefore, the team concluded the sustainability of the Project is "moderate".
- Therefore, additional measures and effort are required in Malawi to maintain and further develop the INSET program.

3-6. Recommendations

(1) Complete unfinished business, including action research reports and materials for school administrators to support teachers.

Activities within the Project Design Matrix (PDM) should be completed. These include lesson observation instruments (Output 2), manuals and guidelines for school administrators (Output 4),

and reports presenting the results of action research.

(2) Secure budgets that are needed to assure quality INSETs (M&E, ToT, etc.)

In 2013 and 2014 the budget was not adequately secured; however, there was a positive change in 2015 and 2016 that resulted in the successful execution of a budget for those years. Still, JICA has provided financing in some areas like M&E, ToT, and write-up workshops to bolster the quality of INSETs. In accordance to the Project, the Government of Malawi should secure its budget and financial resources to conduct INSETs for future years.

(3) Streamline the disbursement of funds for the National INSET by distributing funding directly to the National INSET Centre.

In the year 2015/16, the disbursement of the budget for conducting Divisional INSETs was streamlined to be sent directly to the Divisional Centres, which helped ensure smoother budget executions. This process should be replicated for the National INSET Centre. Thus, the budgets to conduct National INSETs should be streamlined and executed directly to the National INSET Centre, rather than having the finances sent through DTED.

(4) Better summarize the process of action research to complement the skills and knowledge taught by SMASSE INSETs to actual lessons in the classroom.

The action research that was conducted by DTED and Chancellor College have been able to identify real problems that are faced by current teachers in their school lessons, and the research is now working to identify actual practices that can be applied to resolve these issues. Given the differing approaches and characteristics of conducting action research at DTED and Chancellor College, it is important not just to compile the results of action research, but also compile the processes and disseminate the information to a broad audience.

(5) Develop a plan on how action research can be sustained and how it can be incorporated into developing INSET modules.

It is a prerequisite to use the results from action research to feed it back into a system that develops INSET modules based on current teachers' needs. Thereby, the Malawi-side should provide adequate funding to sustain the activities of action research at DTED and Chancellor College. Additionally, there should be coordination and management to help National Trainers be able to sustain their action research activities at DTED.

(6) Develop a strategy to revitalize cluster activities that includes good practices identified through Project activities. These include, engaging more head teachers about the benefits of cluster activities and better utilizing inspectors and Divisional Trainers.

According to interviews, the importance of cluster activities was emphasized by many parties. It was discovered that there are wide ranging differences in the level of activity amongst differing clusters.

In the Msalura Cluster, due to the high level of engagement by the head teacher who serves as the Cluster Leader, there were many good practices taking place within that cluster. To further activate clusters, cluster activities should be shared amongst the others.

- (7) Develop or harmonize lesson observation instruments, so it enables the observer to better assess students' learning.

In Phase 3, the lesson observation instruments that had been developed for the Project and by DIAS had plans to be harmonised; however, there has not yet been agreement on whether this is actually needed among stakeholders. As a larger issue, some teachers have a superficial understanding of the criteria being assessed through the lesson observation instruments. Therefore, the observation instrument that was developed for the Project does not adequately assess students' comprehension or whether lesson objectives have been achieved.

The Project, in consultation with DIAS, should develop an improved observation instrument that can be used even after the Project's termination.

- (8) Fill the vacant Director position at DTED

The Director position at DTED has been vacant for a long time, even though DTED will be expected to play a more central role in coordinating INSET activities in collaboration with Divisions, PRESET institutions, and other MoEST Directorates. Therefore, the post should be filled to enhance the sustainability of SMASSE.

- (9) Strengthen collaboration and communication between DTED and JICA Experts

According to this evaluation, the Project moved forward without finding common ground because of insufficient communication between JICA Experts and DTED (e.g. time conflicts). In order to ensure the sustainability of the Project, improving the sharing of ideas and enhancing technical transfers should take place during the Project's remaining months. Thus, communication between DTED's management and JICA's Experts should be strengthened more than it is currently.

- (10) Revise the Project Design Matrix (PDM)

Since the JCE was terminated, it is important to redact the JCE from the Super Goal section in a revised PDM. Additionally, the data to evaluate the first indicator of the Overall Goal, "the degree of attitude change in the teaching of secondary mathematics and science teachers" had not been collected. Therefore, it is important to discuss and reexamine this indicator before the Project's termination and take necessary steps to measure this indicator.

3-7. Lessons Learned

- (1) Repeating similar types of technical assistance projects with the same counterparts is difficult.

Issues of communication between Malawian counterparts and JICA Experts were pointed out during the interview process. While there are various potential reasons and background for the

communication issues, there are structural reasons that have been observed in similar projects. Such reasons include the challenge for counterparts to continue to implement several phases of technical assistance projects and the difficulty of maintaining the motivation of the counterparts when similar activities have been implemented over the course of many years.

Incentives can be divided into two variations: intrinsic and extrinsic. Intrinsic incentives more important than extrinsic. The Project itself can be innovative, which can spur the motivation of the counterparts. In other words, the opportunity to learn something innovative, along with other factors like strong expectations by the Ministry of Education, may enhance the counterparts' intrinsic incentives.

Therefore, if JICA continues to implement similar technical assistance projects to the same counterpart, there is likelihood that the counterpart may lose motivation to continue with routine project activities. Especially for the JICA Experts who do not have direct authority over counterpart oversight or personnel issues, the less the project provides incentives, the more difficult it becomes to motivate the counterparts. Therefore, it is important to carefully consider which counterpart organization will be responsible, what activities will be conducted, and how they will be conducted, during the design process of subsequent phases within the technical assistance projects.

(2) Practicing what has been learned through the INSETs and applying them to daily lessons is important.

(Concrete examples should be practiced that complement the cascading INSET approach)

Out of the 3 schools that Chancellor College has targeted to conduct action research, the teachers that were conducting the research realised that it is necessary to find processes to effectively implement the practices learned at the SMASSE INSET to their daily classroom activities. Additionally, the action research that was implemented by DTED's National Trainers discovered that the abilities of teachers at the targeted schools to conduct lessons were strengthened through collaborative efforts amongst teachers to apply their experiences acquired from the action research process.

Since SMASSE's cascading training takes place only once a year, it was identified both in this Project, and in similar projects, that this training alone is not enough to adequately change real practices in the classroom. In this evaluation, it was discovered that through action research, a process was created where teachers could gather together and learn from each other's skills and knowledge to further develop upon the teachings of the SMASSE trainings and apply them directly to their real classrooms situations. Therefore, action research helped create a process to fill the gap between SMASSE's cascading trainings and real practices on the ground.

Due to the involvement of "resource persons" that have a high level of content and research knowledge, like university lecturers and National Trainers, action research served as a significant example of how teachers can effectively apply the skills and knowledge gained through the cascading training directly into classrooms. This occurred even though it is difficult to scale up these activities to other institutions.