Research Article

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Development of INSET model for improving Teacher Professionalism in Indonesia

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Abstract：A model of INSET (In-service Teacher Training) has been developed for improving teacher professionalism in Indonesia. Lesson study approach was adopted to develop the model of INSET. Teachers and faculty members collaboratively developed a lesson plan, implemented and observed the lesson followed by post-class discussion to reflect the lesson. The developed lesson plan was based upon hands-on and mind-on activity, daily life, and local materials to promote student active learning. As a result, teachers tend to be more creative to apply various methods of teaching. Teachers were confident enough in facilitating students to learn and participating in scientific forum. Students were motivated to learn as indicated by participating in discussing, asking question, sharing ideas, and arguing.

Keywords：INSET, lesson study, hands-on and mind-on activity, daily life, local materials.

Introduction

Indonesian education system consists of the following level of education, i.e. pre-school education, basic education, secondary education, and higher education. Pre-school education aims at stimulating physical and mental growth of children out-side of the family circle before entering primary education that can be held in format school system or out-of-school education. Among the types of pre-school education available are Kindergarten at the formal school and Play Groups and Day-care Centres at the out-of-school. Kindergarten is provided for children age 5 to 6 years for one to two years of education, while play groups and day-care centres are attended by children at least 3 years old.

Basic Education is a general education of nine years, i.e. six years of primary and three years of junior secondary school. The goal of basic education is to develop students as individuals, members of society, citizens and members of mankind, as well as to prepare them to pursue study in secondary education. Basic Education is a compulsory education that providing the learners with basic knowledge and skills. In addition to the Basic Education, there are also an Islamic Primary School called Madrasah Ibtidaiyah, equivalent to Primary School and an Islamic General Junior Secondary School called Madrasah Tsanawiyah, equivalent to General Junior Secondary School managed and run by the Ministry of Religious Affair.

Secondary education include general secondary school, vocational secondary school, religious secondary school, service related secondary school, and special secondary school. Secondary education gives priority to expanding knowledge and developing student's skills and preparing them to continue their studies to the higher level of education or the preparation of students to enter the world of work and expanding their professional attitude. The length of secondary education is three years for general secondary education and three or four years for vocational education after 9 years of basic

education. There is also an Islamic General Senior Secondary School called Madrasah Aliyah, equivalent to General Senior Secondary School managed and run by the Ministry of Religious Affair.

Higher education is an extension of secondary education consisting of academic and professional education, Academic education is mainly aimed at mastering science, technology, and research, whereas professional education is more aimed at developing practical skills. Institutions involved in higher education are of the following types: academics, polytechnics, school of higher learning, institutes, and universities. The length of higher education is three years for diploma program and four years for bachelor program. After bachelor program students can continue to master program for two years and finally to doctorate program for three years.

According to MONE's data in 2004, number of schools under MONE (Ministry of National Education) consists of 47,937 Pre Schools, 145,867 Primary Schools, 21,256 Junior Secondary Schools, and 13,353 Senior Secondary Schools. Number of students consists of 1,985,749 students of Pre-school, 25,976,285 students of Primary School, 7,523,318 students of Junior Secondary School, and 5,399,547 students of Senior Secondary School. In addition, there are 149,644 pre school teachers, 1,256,246 primary school teachers, 490,307 junior secondary school teachers, 406,065 senior secondary school teachers.

Indonesia is still pacing problems in quality of education as indicated by low rank of Human Development Index (HDI) and TIMSS. With regards to human development report 2005 by UNDP, Indonesia has HDI rank of 110. It is lower than that of Japan (11), Singapore (25), Brunei (25), Malaysia (61), Thailand (73), Philippine (84), and Vietnam (108). Indonesia has participated in TIMSS for twice, in 1999 and 2003. For mathematics, Indonesia was in rank of 34 out of 38 countries in 1999 and rank of 35 out of 46 countries in 2003. For Science, Indonesia was in rank of 32 out of 38 countries in 1999 and rank of 37 out of 46 countries in 2003.

Government of Indonesia has declared Act No 14/2005 re Teacher and Lecturer to improve the quality of education. Teacher is a profession. Profession is reflected into the regulation of Teacher Employment and Deployment using Minimal Academic Qualification Standard (at least Bachelor's Degree (S1) or A four-year diploma program (D4) and passing a professional teacher education program for the certification. Professional Teacher Education Program is equal to 40 credit semesters covering 4 (four) competencies: (1) Pedagogical: students, methods, evaluation, development. (2) Personal: Personal (personality): example, leadership, nurturing. (3) Professional: (subject matter): subject, teaching/learning. (4) Social: (relating to students and parents): mixes well, good moral standing, knows community. On top of civil servant salary, teachers will receive functional allowances, professional allowances and special allowances (only for teachers assigned in remote areas) –with the new Act, a teacher will receive at least 1.5 times of current salary.

Current status of INSET

In-Service Teacher Training (INSET) should play an important role in updating teacher's knowledge and skills for continuous improvement in quality of education. Central Government of Indonesia assigns BPG and PPPG as In-Service Teacher Training Institute to train teachers. BPG was located in each province. BPG used to introduce new approach/teaching method to teachers, such as contextual learning, collaborative learning. Unfortunately, few teachers participated in the training; many more teachers were not participated in the training. After training, most teachers did not share with other teachers at his/her school. Teachers got only the knowledge without implementing it into real teaching. PPPG is a center for ToT (Training of Trainer). There is a PPPG for a subject, for example PPPG for science is located in Bandung. The selected teachers across the country come to the center for training of new approach/teaching method. They are supposed to train teachers at local training center. In addition, another kind of INSET is MGMP. MGMP is a non-structural organization of teachers whose establishment is stimulated in the Government Regulation No. 38/1994 on Educational Personnel. It is a professional forum for subject teachers at district level. They have meeting schedule on Wednesday for mathematics teachers, Saturday for science teachers, and other subject at other days. The MGMP activities were limited on development of lesson plan and item test. However, few MGMPs were active and few teachers join MGMP. Similarly, the results of MGMP activities were not implemented into real teaching at his/her school. Existing INSET have not give significant impact on improvement of quality of

education in Indonesia yet since they pay less attention to the follow-up of the training.

INSET under IMSTEP

The Project for Development of Mathematics and Science Teaching for Primary and Secondary Education, so called IMSTEP (Indonesia Mathematics and Science Teacher Education Project), had been implemented since October 1998 until September 2003 followed by two-year follow-up program of IMSTEP for preparing the dissemination of the project outcomes. Three universities namely Indonesia University of Educaton (UPI), State Universitas of Yogyakarta (UNY), and State Universitas of Malang (UM) implemented the project under supporting Government of Indonesia and Japan through JICA (Japan International Cooperation Agency) Technical Cooperation. The purpose of the project was to promote both pre- and in-service teacher training programs in three mentioned universities. At the beginning of project implementation, activities were focused on preparation of prospective teachers and degree in-service teacher training, such as revising curriculum of pre- and in-service teacher training programs, development of textbooks, development of teaching materials, revising lab work manual, development of database of lab facilities.

In addition to the IMSTEP activities, the non-degree in-service teacher training program so called Piloting Activity (PA) had been implemented in 2001. The purpose of the Piloting Activity was to develop innovative teaching and learning process for secondary school mathematics and science. Two Junior Secondary Schools and two Senior Secondary Schools were selected to be piloting schools by UPI in Bandung, UNY in Yogyakarta, and UM in Malang. Selection criteria were based upon school's commitment and willingness for improvement. School principals assigned teachers to collaborate with faculty members. Faculty members of the participating universities and mathematics and science teachers of piloting schools collaboratively identified problems in teaching-learning process and solve the problems through developing teaching model, which based upon hands-on and mind-on activity, daily life, and local materials. Then, the teacher applied the teaching model at real class while faculty members observed the lesson. Following the lesson, faculty members and teacher held post-class discussion to reflect the effectiveness of the teaching model. JICA experts sometime participate in the Piloting Activity as resource person. As results, teachers and faculty members were able to develop hand made and inexpensive teaching materials to let students learn mathematics and science joyfully, so that students understand mathematical and scientific concept easily. Teachers who involved in PA were motivated to develop innovative teaching process. Collegiality among teachers and faculty members was developed, so that teachers got friendly tutors to get help whenever they find difficulties in developing innovative teaching models. On the other hand, faculty members got valuable experiences of real secondary mathematics and science teaching to be discussed with prospective teachers at the university. Faculty members were also welcomed to conduct studies at piloting schools. Unfortunately, teachers involved in PA were limited on a teacher for one subject at a school, so that dissemination of valuable experience in developing innovative teaching models was not run well. Another reason for slow dissemination of PA due to principals of piloting schools was not involved directly in the PA.

The Follow-up Program of IMSTEP had been implemented since Oktober 2003 for 2 years. The overall goal of the Follow-up Program is to improve students' scientific thinking and experimental skills as well as their understanding of science and mathematics in lower secondary education in Indonesia through institutionalizing and disseminating outputs of the Project. There are two purposes of the project. First, the quality of in-service training in science and mathematics education will be improved by the institutionalized participation of university. Second, education to prospective teachers in science and mathematics at the three universities (UPI, UNY, and UM) will be improved.

To achieve those purposes, seven activities were set up to accomplish the follow-up program, as follows. (1) To develop a framework and mechanism for in-service teacher training program in collaboration with the three universities, educational offices of local governments and MONE (Ministry of National Education). (2) To improve PA guidelines (such as concept, planning, and implementation procedures) as well as qualitative evaluation indicators for its outputs (such as lesson plans). (3) To implement PA with wider types of schools regarding academic level and material condition. (4) To continue revision of common textbooks and other teaching materials for pre-service training. (5) To try out the common textbooks by related faculty members

in science and mathematics of 3 universities and reflect the results in revising the textbooks. (6) To organize joint activities (workshops) with in-service teacher training institutions (such as MGMP, LPMP, and PPPG). (7) To organize the national seminar on current issues and mathematics educations.

The seven activities mentioned above are grouped into three groups of activities, namely (1) Piloting Activity and its evaluation, (2) developing common textbooks, and (3) communication and dissemination.

The expected outputs of the follow-up program are as follows. (1) The strengthened linkage and coordination between existing in-service teacher training institutions and universities. (2) The standardized strategies and methodologies of ongoing and future piloting activities. The greater applicability of lesson plans produced through piloting activities for a wider range of schools with different academic level and material condition. (4) The complete editorial works regarding the manuscripts of common textbooks. (5) The improved quality of common textbooks based on try-out results at universities. (6) Expanded opportunities for secondary school teachers other than pilot schoolteachers to utilize the results of the Project output (such as lesson plans) through joint activities between the Follow-up programmed and MGMP/LPMP/PPPG. (7) Enhanced understanding of personnel concerned in science and mathematics education in 3 universities and related organization on current issues in this area.

Approach of the IMSTEP Follow-up program is illustrated in Figure 1.

Three components of teacher training programs (pre-service, on-service, and in-service) will contribute to the enhancement of quality in mathematics and science education. Among teacher training programs should be inter-connected for couple of reasons. Faculty members at pre-service teacher training program needs feed back on school reality and contemporary teachers' needs to produce good prospective teachers. On the other hand, both piloting teachers (on-service teacher training) and MGMP teachers (in-service teacher training) need consultancy to intervene students and to develop teachers' professionalism. Piloting teachers may share piloting experiences with MGMP teachers and its opportunity to disseminate the piloting outcomes. By collaboration among those teacher training programs, it is believed that quality of science and mathematics education will be improved.

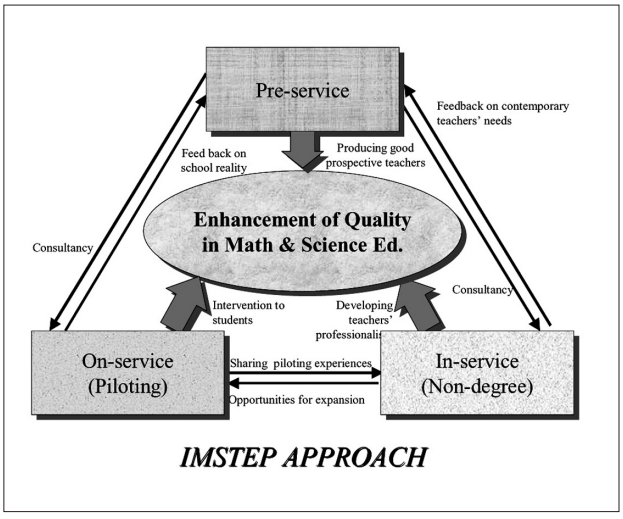

Figure 1. Approach of the IMSTEP Follow-up program.
(Source: Presentation by Saito for LPTK training on 22 Sep 2004)

We enhanced the quality of Piloting Activity (PA) in the IMSTEP Follow-up program implementation through improving the process of post-class discussion, video and printed documentation, as well as evaluation of the impact. Although the PA was not so different from the previous phase that include developing lesson plans, implementing the lesson plans, and conducting post-class discussion, during the follow-up program, the activities of post-class discussion had been improved. The improvement was made on the following aspects: (1) in the previous phase, after implementing a lesson plan the participants (the teacher in charge and observers) did not directly conduct post-class discussion. During the follow-up program these activities were directly conducted soon after the lesson activities; (2) there is a significant change on focus of attention of the discussion from teachers' activities to students learning activities. Post-class discussion is an important part of the piloting activities by which the observers and the teacher in charge could share their findings and understanding of the lesson observed. The impact of the piloting activity and several factors influencing students' motivation in learning science and math has been studied through survey to students and teachers at pilot and control schools.

Three surveys (pre-, mid-, and post-survey) were done during implementation of Follow-up Program of IMSTEP to obtain information regarding various factors affect on student achievement. Studied factors included teachers (educational background), involvement in piloting activity, parent income, school distance, student facilities (textbooks, calculator). Questionnaire was distributed to the students

of piloting classes, their parents, and teachers at piloting schools as well as control schools. Pre-survey was conducted on even semester 2003/2004, mid-survey was conducted on add semester 2004/2005, and post-survey was conducted on even semester 2004/2005. The Questionnaires were distributed to students and teachers of piloting classes and control schools.

To assess achievement of piloting activity, several ways of evaluation were applied, such as observation sheet of student and teacher performance, pre- and post-test sheet, and questionnaire for students and teachers. The results of piloting activities can be reflected in some indicators, such as student performance, student achievement, student perception, and teacher perception.

Student Performance. Student performance in conducting experiment was improved in second cycle as indicated by getting better in handling apparatus. Students' skills in controlling experimental were improved since they considered several factors affecting experiment. For example, in experiment of ecosystem, students considered size of fish, light. Students were motivated to do experiment; they brought local materials for experiment. Also students' skills in observing the experiment, analyzing experimental data, and making conclusion of the experimental results were improved. Few students did not care with accuracy of experimental observation. Fortunately, team works solved accuracy problems because students in a group have different task. For example, some students count movement of fish mouth, some students observe timer, and others write down the experiment data in experiment of ecosystem in biology subject. Students from piloting classes tend to perform better and indicate good motivation while attending classroom activities such as discussion, asking and answering questions, and explaining results of group discussion. It is challenged to promote piloting activity for entire school by involvement of school principals.

Student Achievement. Figure 2 shows the average of gain score of pre- and post-test for piloting and control schools for mathematics and science in 3 cities (Bandung, Yogyakarta, and Malang). There were two control schools of SMP and SMA and four piloting schools (two SMP and two SMA) in each city, except 3 SMPs in Bandung. The item tests were developed based upon national examination, such as EBTANAS and university entrant examination of UMPTN and SPMB.

According to Figure 2, gain scores of piloting schools

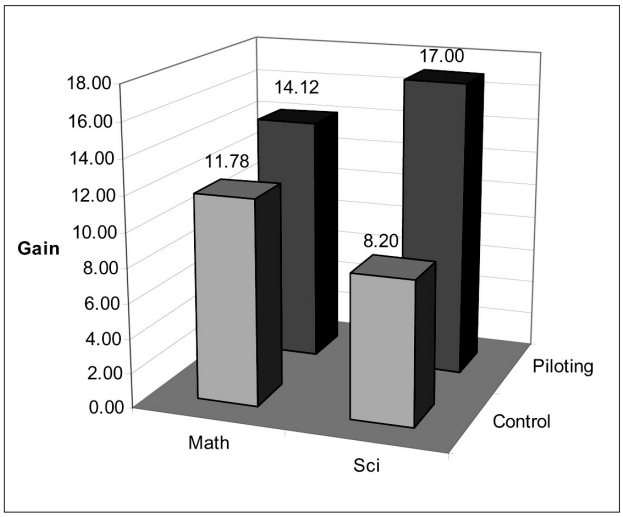

Figure 2. Average gain score of piloting and control school in Bandung, Yogyakarta, Malang City.
(Data was obtained from report of post-survey by Eva Task Force).

are higher than of control schools for both mathematics and science subjects. Differences between gain scores piloting and control schools for mathematics is less than that for science. It indicates that students understanding on mathematics and science subjects were improve due to piloting teachers utilized various learning resources. Also piloting teachers applied hands-on activity and daily life, so that students did not memorize the facts anymore. In addition, learning activities were dominated with practical works at piloting classes.

Student Perception. Data of student perception was collected through student questionnaires. According to the students, teaching method of experiment contributed to their understanding in the lesson. Also, experimental method improved student motivation in learning. Student worksheets helped students to conduct experiment and its problems and made them understand the concept easily. Most students did not have problems in running experiment due to following reasons. (1) Available student worksheets, which guided them in doing step-by-step experiment. (2) Piloting teacher supervised students during experiment. (3) Students worked together in doing experiment.

Most students did not have problem to find local materials for experiment, such as used drinking water cup for beaker glass. With regards to team works in doing experiment, student enjoyed working together because they could share ideas, helped each other, and distributed task among members. Class discussion at the end of lesson session helped students understanding the lesson.

Though, students got difficulty to answer the process skills type of questions of post-test provided by piloting teachers since they used to have low-level cognitive type problems. Teacher almost never gave the process skills type of questions. Students should read carefully the questions since they got long sentences. They also should manage some information/data before answering the questions while time was running out. Finally, the process skills type of questions was challenging according to students.

Teacher Perception. Questionnaire was distributed by piloting team to piloting teachers to collect information regarding teacher perception at the end of semester. Piloting teachers claimed that they got benefit of several workshops and meeting with faculty members for preparing lesson plan, teaching materials, method of evaluation, and tried out of teaching materials prior to application the models at real class. According to questionnaire responds of piloting teachers, the developed model of teaching was effective enough to improve students' motivation in learning science and math since students enjoyed learning science and math, so that piloting teachers would like to apply the developed methods for other topics. Piloting teachers also got improvement in professionalism, experience, and skills in develop lesson plan, student worksheet, teaching materials, and method of evaluation. With regards to post-class discussion, piloting teachers took advantages to revise the next teaching activities. Finally, piloting teachers suggested that number of topics should be increased to cover entire topics offered in a semester and include more teachers in piloting activity.

The impact of piloting activities to non-piloting classes is not so significant as indicated to the results of pre- and post-test for diffuse class at piloting schools. This is primarily due to the limited participation of non-piloting teachers in the piloting activities. Since the ideas of innovation in teaching mathematics and science to be piloted mainly came from faculty members, some teachers still have difficulties to implement the lesson plans.

Faculty-Schools Partnership. Piloting activities have a good impact to form better relationship among faculty members, teachers, and school principals in preparing, implementing, and reflecting the lessons piloted. Based on these results, it is recommended that the piloting activities still need to be continued and disseminated to other teachers within and outside piloting schools. In addition, shifting role from faculty members to school community members to initiate the innovation need to be encourage.

UPI, UNY, and UM disseminated the project outcomes especially Piloting Activity to MGMP. Faculty of Mathematics and Science Education of the participating universities and MGMP for math and science of junior secondary school collaboratively held workshops for the following objectives: (1) to share results of PA, (2) to develop and try out teaching models of junior secondary school science and math in 2004, (3) to introduce lesson study as an alternative for continuous improvement of learning quality of junior secondary school science and math through improvement of teachers' professionalism.

In 2005, we started to conduct lesson study activities at several SMPs in Bandung, Yogyakatra, and Malang. School teachers and faculty members designed and developed collaboratively teaching models. A school teacher conducted a lesson while other teachers, faculty members, school principals, supervisors, educational officer, and JICA experts observed the lesson. Following the lesson, the teacher and observers had post-class discussion to reflect and share the lesson. School principal chaired the post-class discussion. Lists of lesson study activities is shown in Table 1.

In general, the implementation of lesson study covers the following activities: identifying problems by group

Table 1. List of lesson study activities in Bandung

Subject	Date	School	Topic	Teacher	Observer
Math	19th April 2005	SMPN 4 Bandung Grade 7	Plan structure (quadrilateral and triangle): width and circumference	M. Salim Hidayat	Faculty members, teachers, principal, MGMP members, JICA experts (20 observers)
	30th April 2005	SMPN 12 Bandung Grade 7	Plan structure (quadrilateral and triangle): width and circumference	Eha Harningsih	Faculty members, teachers, principal, MGMP members, JICA experts (30 observers)
	26th August 2005	SMPN 12 Bandung Grade 7	Fractional numbers	Eha Harningsih	Faculty members, teachers, principal, MGMP members, JICA experts, JICA mission team (40 observers)

Subject	Date	School	Topic	Teacher	Observer
Physics	21st March 2005	SMPN 2 Bandung Grade 7	Usaha dan energi	Rina	Faculty members, teachers, principal, MGMP members, JICA experts (30 observers)
	8th April 2005	SMPN 15 Bandung Grade 7	Usaha dan daya	Nila	Faculty members, teachers, principal, MGMP members (20 observers)
Biology	3rd March 2005	SMPN 7 Bandung Grade 7	Ecosystem	Yusup	Faculty members, teachers, principal, MGMP members, MKKS, Subdin SLTP, Supervisor, JICA experts (30 observers)
	23rd March 2005	SMPN 7 Bandung Grade 7	Water pollution	Dewi	Faculty members, teachers, principal, MGMP members, JICA experts (30 observers)
Chem	13th April 2005	SMPN 24 Bandung Grade 7	Natural additives	Asep Nugraha	Faculty members, teachers, principal, MGMP members, JICA experts (30 observers)
	6th May 2005	SMPN 24 Bandung Grade 7	Synthetic additives	Endah	Faculty members, teachers, principal, MGMP members, JICA experts (30 observers)

of teachers; developing lesson plan by groups of teachers (if necessary, faculty members could give consultation or comments); implementing the lesson plan; observing the teaching and learning processes by MGMP members, faculty members from F(P)MIPAs, School Principals, JICA experts and prospective teachers from F(P)MIPAs; and evaluating the lesson as well as reflecting on its effect by the teacher in charge and the observers. Based on the observations and reflections, teachers in the lesson-study group revise the lesson. They might change the materials, the activities, the problems posed, the questions asked, or all this things. Figure 3 shows photos of lesson study activities at junior and senior secondary schools in Bandung.

Based on the lesson study implemented, it seems that the activities could effectively change the schools

Figure 3. Students activities during lesson study at junior and senior secondary school in Bandung.

culture as indicate in the following aspects:

1) At the beginning of implementing lesson study activity, piloting teachers feared and refused to be observed and commented by others. In the long run, after several cycles of lesson study, they realized that the comments from others are very useful for their professionalism. Therefore, they are no longer refused even they request to be observed. Finally, teachers became accustom to accepting inputs and recommendations from others, expressing the weakness and the strength of their lessons, sharing ideas for developing better classroom practices, and pointing out the essentials or the important points of classroom activities observed.
2) Although many observers came inside the classrooms while implementation of the lessons, the activities are running well as if the observers are not there.
3) As an effect of implementation of the lesson, students tend to actively involve in classroom activities such as discussing problems within small group and classroom activities, asking and answering questions, proposing argumentations, and explaining results of group discussion.

Since the effect of the lesson study to the schools cultures, it is important that the good practices of the activities need to be disseminated and expanded to other schools within the province or outside the province.

INSET under SISTTEMS

The Program for Strengthening In-Service Teacher Training of Mathematics and Science Education at Junior Secondary Level so called SISTTEMS has been implemented in 3 districts since May 2006 until October 2008. The program is a sequel to IMSTEP and its follow-up program. REDIP's (Regional Education Development and Improvement Project) experience will be incorporated to the program. Objective of the program is to improve education quality at junior secondary level by reorganizing and vitalizing MGMP for mathematics and science.

According to R/D, the overall goals of the program are (1) the model of in-service teacher training primary through MGMP activities applying lesson study is disseminated in the target provinces as a form of continuing teacher professional development; (2) the level of student learning ability in mathematics and science is improved in target districts. The purpose the program is to develop model of MGMP activities applying lesson study for quality improvement of mathematics and science teachers in the target districts.

This program has been implemented in three districts chosen from three provinces, i.e. Sumedang (West Java Province), Bantul (Yogyakarta Province), and Pasuruan (East Java Province). The target districts are located near the participating universities (UPI, UNY, UM), respectively. This program is dealing with mathematics and science teachers of public and private junior secondary schools (under MONE) and public Islamic junior secondary schools (under MORA, Ministry of Religious Affairs) in the three districts. The numbers of schools involve in this program are 83, 98, and 103 schools for district of Sumedang, Bantul, and Pasuruan, respectively. Five hundred to six hundred mathematics and science teachers participate in the program in each target district. Due to earthquake in Bantul this year, District of Bantul runs a recovery program instead.

Organizational structure of SISTTEMS is summarized in Figure 4. This program is supported by 4 DGs and JICA. Those four DGs include Directorate General for Higher Education (DGHE MONE), Directorate General for Quality Improvement of Teacher and Educational Personnel (DGQITEP MONE), Directorate General for Management of Primary and Secondary Education (DGMPSE MONE), and Directorate General for Islamic Education (DGIE MORA). UPI, UNY, and UM have worked closely with District Educational Office for planning, organizing, coordinating and monitoring lesson study and other related activities. Commencement of the program implementation at district level was held on 10th August 2006 for Sumedang through district inception meeting to socialize the program to stake holders, such as board of education, representative of school principals, MGMP, and school supervisors. Mean while, team for monitoring and evaluation conducted baseline survey to collect data through questionnaire and interview to students, teachers, and principals as well as observation of classroom activities. Following district inception meeting, training for school principal and MGMP facilitator for all target school principals and representative of MGMP centers were held on 11th to 13th September 2006 to discuss action plan and their support. There are 8 MGMP centers for implementing lesson study in each target district. Each center consists of about 10 neighboring schools. Mathematics and science

teachers from those schools have bimonthly meeting at the MGMP center on Wednesday for mathematics teachers and Saturday for science teachers.

At first MGMP meeting, faculty members of the participating universities and mathematics and science teachers collaboratively discuss the mathematics and science teaching problems at junior secondary schools and solve it by designing lesson plan to let students learn. At the second meeting, the faculty members and the teachers continued to develop teaching materials. At the third meeting, the developed teaching materials will be tried out before applying it. At the forth meeting, a teacher will apply the developed teaching model while other 30 teachers, 5 faculty members, a school supervisor, school principals, representative of district educational office will observe the lesson at a school center. Post-class discussion will be held right after the lesson to reflect effectiveness the teaching model. MGMP forum will be held at the end of semester at the target district to exchange experience and disseminate the best practices. Post survey will be conducted at the end of the program

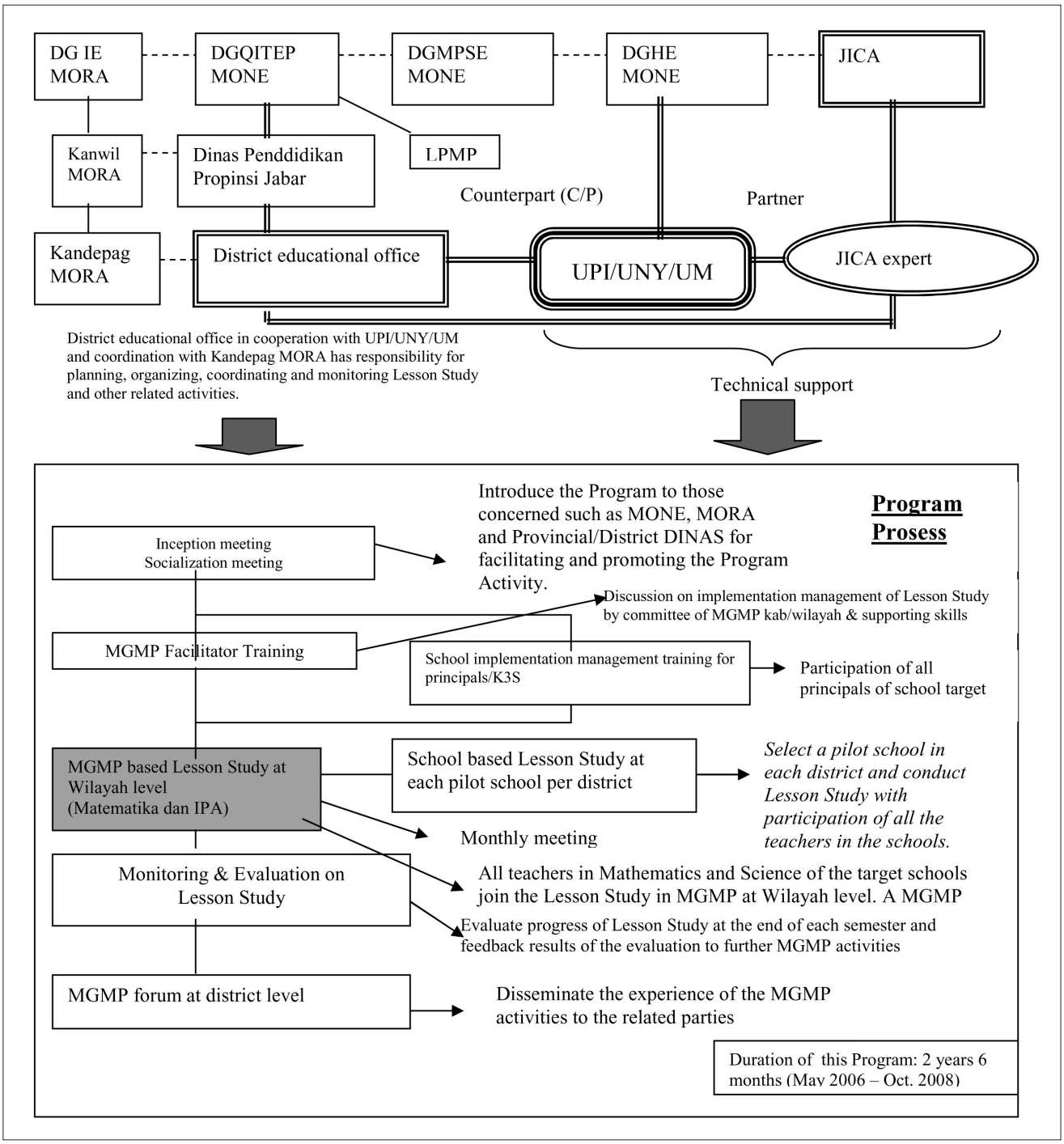

Figure 4. Organizational Structure of SISTTEMS

implementation and compare it with the baseline survey to obtain information regarding the impact of the program. It was found that school principals have supported this program by giving teachers permit and transportation expenses to participate in the bimonthly MGMP meeting. Teachers claim that this program is potential for improving teacher's professionalism though few teachers were not sure to run well the lesson study.

Conclusion

The INSETT model was developed by collaborative and continuous study of the lesson through collegiality and mutual learning to build learning community. The developed INSET model through PA or lesson study has changed students, teachers, and faculty members' performance. Students with low achievers become more interested in learning science and mathematics. They started to feel that learning science is joyful. Students became able to express their ideas freely and they have opportunity for discussion with their classmates. They become interested in science and math subject as well as improve their self-confidence. The INSET model has promoted not only student active learning but also cognitive aspect of student achievement as indicated by the improvement of test results.

Teachers have been motivated to innovate methods of teaching. Teachers got alternative method to let students learn and construct their own knowledge, for example students found a formula of cycle area through experiment in mathematics. In this case, teachers acted as facilitator rather than gave the formula directly to students. Piloting activity or lesson study has formed collegiality between teachers and faculty members through initiative collaborative works. No more feeling superior and inferior among them. They can come and see their partners for help at campus or school without difficulty. They just make a call to make appointment. They got self-fulfillment.

Faculty members get closer to teachers and students, so that they understand more about school reality as feed back. According to collaborative experience, they change their own lesson at pre-service training program. They support teachers by helping teachers reviewing lesson problems. Faculty members can visit schools to see and discuss lesson plan any time without difficulty in permitting.

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要　約

インドネシアの教員の専門性向上のためにINSET（教員研修）モデルが開発された．INSETモデル開発のために授業研究アプローチが採択された．教員と学部教員との共同で指導案の作成，授業の実施及び観察，授業後の検討会を行った．指導案は，生徒の積極的な学習を促すよう，ハンズオンやマインドオン活動，日常生活，身近な素材をもとに作られた．結果として，教員は様々な教授法を活用する創造的になる傾向がみられた．教員は，生徒の学習や科学的な議論の場への参加を促すことに自信を持つことができた．生徒たちは議論への参加や，質問を投げかけること，アイデアを共有することや議論を通して学習することへと動機付けられた．　　（訳責：教員教育国際協力センター）