

THE DEVELOPING TEACHING PRACTICE MODEL AS AN EFFORT TO IMPROVE THE QUALITY OF MECHANICAL ENGINEERING VOCATIONAL SCHOOL TEACHERS

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Abstract

This research aims to develop teaching practice program model for mechanical engineering education teacher trainees of State University of Surabaya. This research applied research and development (R & D) design by Borg & Gall in ten steps which are classified into two stages: research and data collection and product development. The research and data collection were conducted by applying qualitative approach through observation, interview, documentation on seven State 'LPTK', education office, teacher profession association, teaching practice student, teaching practice supervising lecturer, headmaster, and teacher tutor. The data analysis in this stage was conducted based on the technique developed by Miles and Huberman. Data validity was tested with data triangulation using double sources as comparison. The product development stage included model pre-design making, introductory test, model revision, model test, model revision, field test, and final model revision. First stage model test was conducted in mechanical engineering department with three vocational schools. The second stage model test was conducted in mechanical engineering department with six vocational schools. The last is dissemination stage in the form of spreading the model yielded from the product development to professionals, authorities, and policy makers. The result at this research is a teaching practice model called "KPrIP2" which consists of four main product components. "K" means partnership between Mechanical Engineering Department of State University of Surabaya and the education office of province/regency/city in continuous planning, action, and evaluation. "Pr" means pre-teaching practice in which the students do introductory activities in vocational schools to observe and coordinate with the school's department to determine who will be the teacher tutor and what material/subject to be used in the teaching practice II. "I" means that all pre teaching practice activities, starting from classroom peer-teaching, laboratory peer-teaching, microteaching, and real teaching in vocational school, are conducted individually and independently. "P2" means that teaching service activities must be supervised by competent/professional advisors, i.e. who have the same pedagogical and major background with the students who do the teaching practice and play role as the supervising lecturer of teaching practice I which is continued to be the advisor in teaching practice II. Teaching practice model "KPrIP2" is claimed to be effective to reach the teaching practice objectives but inefficient in budgeting.

Keywords: *teaching practice models, improve the quality teacher trainees*

INTRODUCTION

Hammond & Bransford (2005, p. 2) stated that: “Education is increasingly important to success of both individuals and nation.” The success of a person or a group of person in a nation or in a country was heavily influenced by the education that the citizens got. A qualified education was the key answer for all the problems that a country or a nation encountered from one generation to another.

Teachers/instructors/educators had a strategic role in the formal education. Alcorn (1999, p. 23) stated that in any cases the quality of an educational system in overall was heavily related to the quality of the teachers; therefore, the improvement of the education quality should be improved in accordance with the improvement of the teacher quality.

Rizali, Indra, & Dharma (2009, p. 3) also stated that the the education quality of a country depended on the quality of the teachers and the quality of the teachers was determined by the teachers’ willingness to improve their quality. In other words, the teachers should the agents of change for themselves before they became the agents of change for their nation. In addition, Fullan (2007, p. 115) stated that: “Educational change depends on what teachers do and think – it’s as simple and as complex that. It would all be so easy if we could legislate change in thinking. Classrooms and schools become effective when (1) quality people are recruited to teaching, and (2) the workplace is organize to energized teachers and reward accomplishments. The two are intimately related. Professionally rewarding workplace conditions attract good people.”

No matter how the story and the situation had gone, the profession of a teacher still became an important part in the educational process within a school. Therefore, in each of the issues regarding the process, the educational results or impacts were always associated to the to the teachers’ quality or professionalism.

Based on the testing performed by the National Department of Education in order to find the level of teachers’ feasibility and competence in 2009 (Dharma, 2009), the results showed that around 77.85% of the elementary school teachers were not feasible to teach due to the lack of requirements. In

addition, the teachers’ level of mastery toward the subjects that they taught were low as well. The results of general test for the kindergarten/elementary school teachers were 34.26 in average, while for the teachers from the other degrees were 40.15 in average. The score for the mastery of math and science subject was low as well, namely 22.33 in average. Another fact found by Samani (2012, p. 219) mentioned that the scores of teachers’ UKA based on the location where they taught were in average as follows: kindergarten teachers 58.10%; elementary school teachers 36.40%; junior high school teachers 45.00%; senior high school teachers 48.80%; vocational high school teachers 48.80%; and difable school teachers 48.30%. The low percentage of the teachers’ UKA scores triggered several questions such as, “What were the graduation standards of LPTK where they learned?” and “What were the coaching activities that they provided in the school where they taught?”

Responding to the polemic regarding the teachers’ low quality, the General Chief of Indonesian Teachers Club, Dharma (2009) stated that the problems that the teachers encountered were very complex. The teachers came from different educational background, there had not been any education or training in order to update the teachers’ knowledge and the Institution of Educational Staff Training (*Lembaga Pendidikan Tenaga Kependidikan* or *LPTK*) as the institution that educated the teachers was considered not having a satisfying quality for generating the well-qualified teachers.

Responding the society’s concern regarding the polemic of the teachers’ low quality, Jalal & Bisri (2001) mentioned that in order to improve the teachers’ professionalism quality, at least there were 4 (four) aspects that should be implemented namely: (1) improving the teacher candidates’ quality; (2) improving the teachers’ recruitment mechanism; (3) improving the teachers’ educational quality; and (4) improving the teachers’ professionalism.

In similar tone, Nuh (2010) asserted that in order to improve the teachers’ professionalism, there were 5 (five) aspects that should be done namely: (1) improving the Institution of Educational Staff Training; (2) improving the rewards of the profession by means of teacher certification; (3) improving

the principals' leadership and managerial quality; (4) improving the School Supervisors performance; and (5) distributing the teachers more evenly throughout the Republic of Indonesia. In accordance with Jalal & Nuh (Samani, 2013) also stated that the Institution of Educational Staff Training in Indonesia turned the teachers' education to be so massive that the higher education generating the professional teachers should be strengthened.

On the other hand, another data from Kompas (Anonymous, 2014) mentioned that the data of persons interested in the teacher candidate education of LPTK was improving. The competitive edge (the selection tightness) of the educational study program was 1:140 and it had been beyond the doctoral study program which competitive edge was 1:80. Around 200 of 1500 candidates that attended the enrolled to the study program via achievements results (without attending the enrollment test), the first to the fifth rank had chosen the Faculty of Teachers Training and Education. Based on the data, the researcher found that it had been the time for the government to revitalize the teacher candidate higher education and to design specific test in order to screen the teacher candidate. A teacher candidate should not only be intelligent but also should have characters of an educator.

Based on the data in the above explanation, the researcher would like to state that the improvement of teacher quality in the Indonesia should be carried out in at least 2 (two) ways namely: (1) improving the quality of LPTK; and (2) improving the teacher quality by means of certification of teacher profession program (*program sertifikasi profesi guru* or PPG). The improvement of teacher quality by means of the certification program still becomes an intriguing national issue. PPG was suspected to not to have automatic impacts on the improvement of teacher performance quality (Kompas, January 8th, 2011, p.12).

The program of teacher certification had been implemented according to the mandate of Law Number 14 Year 2005 Regarding Teachers and Lecturers (Depdiknas, 2005), Government Regulation Number 14 Year 2005 Regarding the National Standard of Education and Government Regulation Number 74 Year 2008 Regarding Teachers (Presiden

RI, 2008). In the recent time the teacher certification has been carried out in 2 (two) ways. The first one is the in-service teacher certification which has been implemented based on the Regulation of the Minister of National Education Number 16 Year 2007 Regarding the Academic Qualification Standard and the Teacher Competence (Menteri Pendidikan Nasional, 2007). Then, the second one is the pre-service teacher certification that has been implemented based on the Regulation of the Minister of National Education Number 8 Year 2009 regarding the Program of Professional Education for the Pre-Service Teachers (Menteri Pendidikan Nasional, 2009).

In the mean time, the program of LPTK quality improvement had not been heard nationally, whereas, the existing program depends on the policy of each LPTK including the Surabaya State University. Suparlan (2008, p. 165) argued that the teachers' ability did not only count on the output resulted by LPTK (pre-service training and education). The pre-service training institutions and the in-service training institutions should cooperate from one to another altogether with the users (schools) of teacher candidates (on the job training).

The Department of Engineering Education (*Jurusan Pendidikan Teknik Mesin* or JPTM), Surabaya State University, was established based on the Minister of PTIP Letter of Decree No. 128 issued on December 24th, 1964; the department had two study programs, namely the undergraduate program of Engineering Study Program and the diploma program of Engineering. Each of the study programs had two concentrations namely Techniques of Automotive Machine (*Teknik Otomotif Mesin* or TOM) and Techniques of Productive Machine (*Teknik Mesin Produksi* or TMP). Then, the department turned into the Department of Engineering and consisted of the undergraduate program of Engineering Education Study Program only. The study program was mandated to generate the teachers or the teacher candidates in the vocational high schools or similar degrees.

Based on the Law Number 20/2003 regarding the National Education System Article 18 (Department of National Education, 2003), vocational high schools were a form of middle-degree education. Vocational high

schools were educational institutions that afforded to provide an experience of direct practice to the learning participants in order to develop their ability so that the learning participants would have the necessary skills in their related occupations. The Regulation of Minister of National Education Number 22 Year 2006 Regarding the Competence Standard of Educational Unit Graduation explained the objectives of vocational high schools/*madrasah ibtidaiyah kejuruan* (Department of National Education, 2006) as follows: to improve the intelligence, knowledge, attitude, personality, noble characters and skills of independent living and attending the higher education according to the vocation. The curriculum structure of vocational high schools was directed in such a way that the graduates might work effectively and efficiently in order to develop their skills and capabilities, to have high stamina, to master the domain of expertise and the foundations of knowledge and technology, to have high work ethic, to be able to communicate according to the occupational demands and to have the self-development ability.

Attending to the educational objectives of vocational high schools that had 2 (two) domains namely theory and practice, then it was assumed that the process of teacher candidates education should be different in terms of attending to the ability of the two domains equally. This matter also implied that the educational process of vocational high school teacher candidates should be quite different (peculiar) in comparison to the teacher candidates of the other educational degree (senior high schools). In relation to the peculiar educational process, the researcher was interested to have deeper view on the process of vocational high school teacher candidates education in LPTK, especially in the implementation of Teaching Practice Program (*Program Pengalaman Lapangan* or PPL).

Teaching Practice Program was a prerequisite domain that the students of undergraduate program should take and in order to take the course all of the applicant students should finish all of the educational course. Teacher Practice Program was a peculiar course because the course had been a culmination of the theoretical and the practical learning experience in developing the students competence so that they would be prepared to

be professional teaching staffs. Teaching Practice Program was one of the curricular activities that demanded the synergy between the theoretical mastery and the practice; as a result, the course demanded serious attention synergically, directedly and guidedly from all of the related elements (LPTK, the Office of Education and Partner Schools). Teaching Practice Program provided direct experience toward for the students in terms of direct practice (internship) in being teaching staffs (teachers and non-teachers) in the campus and in the practical school so that they would have pedagogic, personality, social and professional competences as being quoted in the Government Regulation Number 19 Year 2005 regarding the National Standard of Education.

The position of Teaching Practice Program course was heavily important in the curriculum structure of the educational study because the course contained two professional (domain of study) and pedagogic competence mastery, in which the implementation involved the other party (vocational high schools). On the contrary, the practical condition in the field frequently encountered “complaints” reported by several officials of vocational high schools regarding the low quality of the students sent for the implementation of Teaching Practice Program (the complaints were such as: the students were lack of teaching material mastery (professional competence) especially in the practical subjects in the garage/laboratory, the students were lack of variation of learning method variation and class management (paedagogic competence), the students were lack of motivation to learn more and of self confidence (personality confidence) and the students were inclusive in the communication (social competence) during the teaching practice in the partner schools. Even in an extreme manner one of the officials from the state vocational high schools in Surabaya stated that for the next year his school would not accept the applicants from the Teaching Practice Program if the quality of the applicants had not been improved yet.

Samani (2011) illustrated the teachers who still had the main role in the formal education (school) and the role of Teaching Practice Program for the teacher candidates shows in Figure 1.

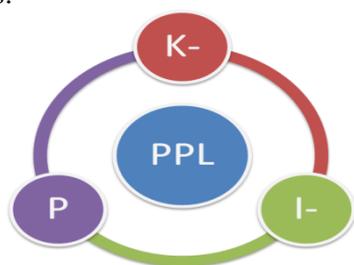
The illustration in the Figure 1 was in accordance with and was supporting the

opinion of Nuh and Jalal that teachers were still the main factor in formal education/school so that LPTK should prepare the Teaching Practice Program as maximum as possible in order to be able to generate the competent teacher candidates.



Figure 1. The Illustration of Teachers and the Role of Teaching Practice Program

The implementation of Teaching Practice Program in Surabaya State University in the present time implemented the Teaching Practice Program I and the Teaching Practice Program II that belonged to the Scientific and Skills Course (*Matakuliah Keilmuan dan Keterampilan* or MKK) with the credit load 2 for each of the course. Teaching Practice Program I contained the simulation activities of peer teaching and micro teaching in the campus. All of the activities in Teaching Practice Program I were implemented by the lecturers from the related study programs without involving the external party. On the other hand, Teaching Practice Program II contained the internship/practical activities in the partner schools in order to attain the direct teaching and non-teaching experience. Then, the model of Teaching Practice Program in the Surabaya State University was drawn in the following pictures:



K-: Cooperation (*Kerjasama*), **I-**: Individuals (*Individual*), **M-**: Mentors (*Pembimbing*)

Figure 2. The Model of Recent Teaching Practice Program in the Department of Engineering

The model contained 3 (three) domains. The domain “K-“ implied the cooperation established between LPTK and school (vocational high schools) in the form of MOU of

Teaching Practice Program II Implementation. The schools were never involved in the aspects of Teaching Practice Program planning and evaluation. Then, the researcher found a fact that LPTK had never been in any cooperation with the Office of Education in the Province/County/City and the Association of Teachers (PGRI) in terms of Teaching Practice Program planning, implementation and evaluation.

The domain “I-“ (individual “minus”) implied that the Teaching Practice Program activities that should be implemented by each of the students individually turned out to be different; not all of the students implemented the simulation activities of micro-teaching in Teaching Practice Program I due to the multiple limitations. In addition, the simulation of peer-teaching was only implemented in the class for the theoretical courses only and, meanwhile, the practical peer-teaching in the laboratory/garage was frequently not implemented due to the multiple limitations.

The domain “P” (Mentors) referred that the mentoring teachers of Teaching Practice Program (*Dosen Pembimbing Lapangan* or DPL). In the Teaching Practice 1, the one who had the main role was only the mentoring lecturers who had been appointed by chief of each department with the ratio 1:10.

Meanwhile, on Teaching Practice Program II, the Mentoring Lecturer 2 was appointed by the UPT-4 based on the recommendation from the chief of department with the ratio 1:20 – 1:40 (not ideal). The Mentoring Teacher 2 only performed the administrative role namely accompanying, supervising and withdrawing the students from the partner schools. The one who had the important role in Teaching Practice Program II was “Sudden Mentoring Lecture” (*DPL Luar Biasa* or supervising teacher).

From the recent condition, the teacher found that not all of the Mentoring Lecturer 1 was assigned (appointed) as the Mentoring Teacher 2. In addition, Mentoring Lecturer 2 usually had educational background that was different from the students; as a result, the guidance of Teaching Practice Program did not operate fluently especially in relation to the subject materials of Teaching Practice Program.

In order to prove such condition, the researcher performed a preliminary study by

means of pre-survey. Pre-survey was implemented internally and externally. The internal pre-survey was performed by means of interview toward the students who had performed Teaching Practice Program, the Mentoring Lecturer 1 and the Mentoring Lecture 2. Then, the external pre-survey was performed by means of interview toward the officials/supervising teachers of vocational high schools and the 7 managers of State LPTK in Java.

From the internal pre-survey, the researcher found that 80% of the students who had taken the Teaching Practice Program course stated that they were less satisfied toward the implementation of Teaching Practice Program I in the campus and the reasons were the low amount of time allocated for implementing the peer-teaching simulation, the unsynchronized materials of Teaching Practice Program I and the partner schools of Teaching Practice Program II, the low competence of Mentoring Lecturer 1, the total absence of school involvement and the total absence of school orientation or observation before they were deployed to the vocational high schools. On the contrary, from the interview with the Mentoring Lecturer 1 the researcher found that the low numbers of the students who attended the peer-teaching simulation was due to the unscheduled activities of Teaching Practice 1 in the course schedule provided by the department; as a result, the students did not have the scheduled space and time for the simulation.

From the external pre-survey, the researcher found that 90% of the students were less satisfied toward the implementation of Teaching Practice Program II. According to the researcher' diagnosis, the causes were as follows: the extremely short period of Teaching Practice Program II implementation in the partner schools (2 months), the unsynchronization between the materials that had been taught in the Teaching Practice 1 and the school condition, the practical learning facilities in the campus that were lack in terms of quality and quantity, the Mentoring Lecturer 2 who had different educational background from the one of the students, the different learning format between the simulation in the campus and the one of the partner schools and the students' lack of confidence when they were asked to teach the practical subjects /competence in the garage or laboratorium.

From the external pre-survey in several state LPTK located in Java, the researcher found that several LPTKs had different model of Teaching Practice Program implementation and the differences were found in the name of the course, the form of implementing organization, the academic load, the period allocated for the program, the duration of implementation period, the program requirements and the program passing grade. In addition, the researcher also found specific matters such as pre-Teaching Practice Program activities (the program should be conducted as early as possible), study program-based Teaching Practice Program, inter-university cooperation, offices of education and associations of school and profession.

Based on the results of the pre-surveys, the researcher assumed that the similar activities in terms of generating the vocational high school teacher candidates in the engineering study program should be "managed" by means of similar approaches in the educational standard so that the related institutions would be able to generate the standardized vocational high school teacher candidates.

Based on the rationality that teachers still held the key role in improving the quality of Indonesian human resources, the LPTK should be qualified as well in terms of improving the Teaching Practice Program activities as the peculiar character of LPTK. The pursuit should be implemented seriously and maximally.

RESEARCH METHOD

The research implemented the Research and Development (R&D) method proposed by Borg & Gall because the method was in accordance with the objective of the research, namely to generate a model of Teaching Practice Program that improved the quality of vocational high school teacher candidates in the engineering study program.

According to Borg & Gall (1983, p. 772), the researcher found the following definition: Educational research and development (R & D) is process used to develop and validate educational products. Unfortunately, R & D still plays a minor role in education. Less than one percent of education expenditures are for this purpose, This is probably one

of the main reason why progress in education has lagged far behind progress in other field.

Furthermore, Sugiyono, (2012) stated that the R&D model belonged to the category of “need to do” research, namely a research which results would be used for assisting the implementation of a job so that the product resulted from the R&D research would be more productive, effective and efficient.

Borg & Gall (1983, p. 774) mentioned the phases in a developmental research as R & D cycle. According to Borg & Gall (1983, p. 775) R & D cycle consisted of 10 phases and the phases might be categorized into two stages. The first stage was research and information gathering and the second stage was the product development.

The stage of research and information gathering was to generate a conceptual model for the Teaching Practice Program held by the Department of Engineering Surabaya State University. The conceptual model was attained by means of two-stage descriptive qualitative research method. The first stage was to identify the strength and the weakness of the recent Teaching Practice Program model by means of interview toward all of the program participants. Then, the second stage was to identify the strength and the weakness of the Teaching Practice Program implementation in any LPTK by means of interview, observation and institution documentation. The data that had been attained would be analyzed by means of Miles & Huberman (1992, p. 22) interactive analysis. For the validity inspection, the researcher implemented the triangulation method. Next, the conceptual model would be validated by means of Delphi technique before the implementation of stage I experiment in order to generate the hypothetic model of Teaching Practice Program I or the stage I model.

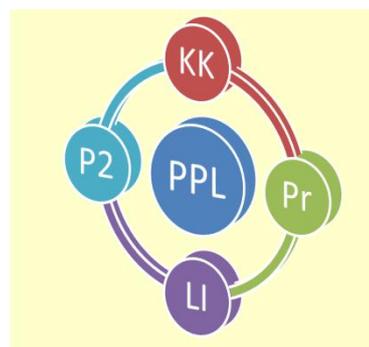
The stage of product development was to generate the final model of Teaching Practice Program. The final model of Teaching Practice Program was attained by performing the field experiment 1 (limited experiment) in the Department of Engineering and 3 vocational high schools. The results of the first experiment would be discussed in the focus group discussion (FGD) in order to be validated as stage II model. The stage II model would have trial in the stage II experiment (expanded experiment) in the Department of

Engineering and 6 vocational high schools. The results of stage II model experiment would be given suggestions by the stakeholders of Teaching Practice Program such as the expert teams of Teaching Practice Program, the supervising teacher, Mentoring Lecturer 1 and Mentoring Lecturer 2. The results of final suggestion would be regarded the final model of Teaching Practice Program for the Department of Engineering Surabaya State University.

The stage of research and information gathering was implemented by using 10 (ten) instruments and was started from May 2010 until February 2011. On the other hand, the stage of product development was started from February 2011 until December 2012.

RESULTS AND DISCUSSIONS

The conceptual model that had been generated was as follows:



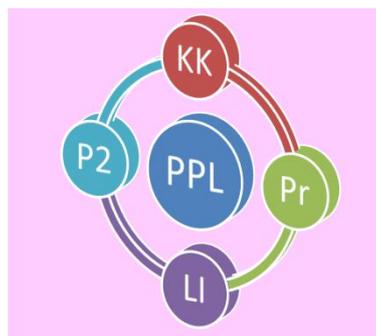
KK: partnership cooperation (*Kerjasama Kemitraan*); **Pr**: pre-Teaching Practice Program (Pra-PPL); **LI**: individual training (*Latihan Individual*); **P₂**: professional mentor (*pembimbing profesional*)

Figure 3. The Conceptual Model of Teaching Practice Program

The conceptual model consisted of 4 (four) domains namely: partnership cooperation, pre-Teaching Practice Program, individual training and professional mentor. The domain of partnership cooperation referred to the cooperation in the form of MOU between LPTK, offices of education in the province/county/city level, vocational high schools and association of teacher profession (PGRI). The domain of pre-Teaching Practice Program referred to the activities of identifying as early as possible the vocational high schools as the

actual site of teaching practice provided by Teaching Practice Program II. The domain of pre-Teaching Practice Program was implemented in the initial activities of Teaching Practice Program I with a target that the students had found the schools where they should practice their teaching activities, the materials that they should teach and the supervising teachers that would guide them in the Teaching Practice Program II. The domain of individual practice referred to all of the activities that the students should perform starting from the registration up to the final report. The domain of professional mentor referred to the fact that the students were guided by a mentoring lecturer who was competent and who was highly committed to guide the students as the competent teacher candidates.

After attaining the internal validation (expertise) by means of Delphi technique, the conceptual model would be turned into a hypothetic model which was also stated as the stage I model as follows:



KK : partnership cooperation (*kerjasama kemitraan*); **Pr** : pre-Teaching Practice Program (pra-PPL); **LI** : individual training (*latihan individual*); **P₂** : professional mentor (*pembimbing profesional*)

Figure 4. The Hypothetic Model of Teaching Practice Program

The hypothetic model of Teaching Practice Program was still similar to the conceptual model of Teaching Practice Program which consisted of 4 (four) domains namely: partnership cooperation, pre-Teaching Practice Program, individual training and professional mentor. The difference of the hypothetic model and of the conceptual model was in the details of the domain of partnership cooperation. The partnership cooperation was con-

ducted only between LPTK and offices of education in the province/level/city level in the aspect of implementation. On the other hand, the partnership cooperation between LPTK and vocational high schools was conducted in the aspects of Teaching Practice Program planning, implementation and evaluation.

For the other 3 (three) domains, namely the domain of pre-Teaching Practice Program, individual training and professional mentor, there were no differences in the details.

The stage II model of Teaching Practice Program as the result stage I experiment (limited experiment) and the suggestions from FGD participants was as follows:



PC: partnership cooperation; **Pr**: pre-Teaching Practice Program; **IL**: individual training; **P₂**: professional mentor

Figure 5. The Model of Stage II Teaching Practice Program

Based on the results of the interview with the mentoring lecturers of Teaching Practice Program I, the mentoring lecturers of Teaching Practice Program II and the supervising teachers by means of instrument number 8 regarding the guidelines of interview on the effectiveness of Teaching Practice Program model (code PW EF-D-GP, appendix: research instrument) the researchers found several suggestions as follows: the department should increase the amount of socialization of the pre-Teaching Practice Program activities to the mentoring lecturers of Teaching Practice Program, the principals, the supervising teachers and the students of Teaching Practice Program. Another suggestion that the researcher had was that the pre-Teaching Practice Program had attained good suggestions from the vocational high schools and, therefore, the activities should be implemented as

well to the next Teaching Practice Program implementation; in fact, the status of the activities should be appointed as the decree of policy-making institutions.

Based on the phases in the stage I experiment of Teaching Practice Program model and the stage II experiment of Teaching Practice Program model, the researcher defined the final model of Teaching Practice Program model for the Department of Engineering Surabaya State University as follows:



PC: partnership cooperation; Pr: pre-Teaching Practice Program; IL: individual training; P2: professional mentor

Figure 6. Final Product of Teaching Practice Program Model for the Department of Engineering Surabaya State University (“KPrIP2”)

Based on the trials toward Teaching Practice Program from the recent Teaching Practice Program model in the Department of Engineering, the conceptual model, the hypothetic model (stage I model), the stage II model and up to the final Teaching Practice Program model (“KPrIP2”), in general there had not been many changes or developments. The main model had not been changed and consisted of 4 (four) domains namely partnership cooperation (LPTK), offices of education in the province/county/city level and vocational high schools), pre-Teaching Practice Prog-

ram, individual training and professional mentor.

The changes that had been occurred were namely as follows: the absence of the association of teacher profession (PGRI) in the partnership cooperation, the changes of time allocation for the pre-Teaching Practice Program activities from one month into two weeks and the needs for more intensive socialization on the pre-Teaching Practice Program activities to the students, mentoring lecturers, offices of education in the province/county/city level, the officials of vocational high schools and the supervising teachers. However, another matter that should be given certain attentions and notes was that whatever Teaching Practice Program model that had been resulted the necessary follow up should be consistence and continuity in implementing the model that had been resulted.

The objective of Teaching Practice Program in the Department of Engineering Surabaya State University was to prepare the students to be teaching staffs (teachers/non-teachers) who had professional, paedagogic, personal and social competences. The achievement of the objective of Teaching Practice Program in the Department of Engineering Surabaya State University might be viewed effectively from two parameters. The first parameter was the achievement of 12 (twelve) product specifications that had been planned in Chapter 1. The second parameter was the results of interview on the effectiveness of Teaching Practice Program model with the mentoring lecturers of Teaching Practice Program and the supervising teachers based on the instrument number 8 encoded: PW EF-DP-GP.

Based on 12 product specifications that had been developed and based on the final product of Teaching Practice Program entitled “KPrIP2” that had been defined, the outline of model effectiveness was given as follows Table 1.

Table 1. The Details on the Effectiveness of Teaching Practice Program Model

No.	The Product Specifications that Had been Planned	The Product Specifications that Had been Resulted	Note
1	2	3	4
1	The Teaching Practice Program Activities were planned and implemented by involving the offices of education in the province/county/city level, vocational high	The Teaching Practice Program activities were planned and implemented only by involving the officess of education in the province/county/city and the vocational high schools under an MOU.	Less Effective

No.	The Product Specifications that Had been Planned	The Product Specifications that Had been Resulted	Note
1	2	3	4
	schools and association of professional teachers (MOU).		
2	All of the administrative activities in Teaching Practice Program I and Teaching Practice Program II was performed in online manner.	The registration of Teaching Practice Program I and Teaching Practice Program II courses had been done in online manner via Surabaya State University Academic Information System. However, the online program had not been able to synergize with the Teaching Practice Program details such as registration requirements, reports and others.	Less Effective
3	The Teaching Practice Program requirements were as follows: having been graduated from 80 credits with minimum Grade Points Academic 2.0; having been graduated from all of the skill (educational) courses with minimum Grade Point Academic 2.0.	The Teaching Practice Program requirements were as follows: having been graduated from 80 credits with minimum Grade Points Academic 2.0; having been graduated from all of the skill (educational) courses with minimum Grade Point Academic 2.0. The requirements had been implemented; however, the requirements had not been checked to the online program and should be inspected manually.	Effective
4	The Teaching Practice Program should prepare the students to acknowledge the overall aspects of vocational high schools as soon as possible before performing the teaching practice in the partner schools.	The pre-Teaching Practice Program activities were able to encourage the students to acknowledge the vocational high schools earlier and were useful for the preparation of Teaching Practice Program I and Teaching Practice Program II.	Effective
5	The Teaching Practice Program was implemented in one academic year, namely Teaching Practice Program I in the campus or the partner schools for 6 months and and Teaching Practice Program II in the partner schools for 6 months as well.	The Teaching Practice Program I was implemented for 1 (one) semester in the campus (it was impossible to be implemented in the partner schools); meanwhile, Teaching Practice Program II was implemented for 2 months only (it was impossible to be implemented for 6 months) due to the policy regulation.	Less Effective
6	The main activities in the Teaching Practice Program I were the peer-teaching simulations and the microteaching with the theoretical materials in the class and the practical materials in the laboratory/garage individually.	The main activities in the Teaching Practice Program I had been containing the peer-teaching simulations and the microteaching that were implemented individually in the class as well as in the laboratory.	Effective
7	The debriefing of Teaching Practice Program I was given in the campus or in the partner schools and the materials were as follows: the concept of Teaching Practice Program, the basic concept of Vocational High School, the design of Lesson Plan, multiple teaching-learning strategic method/model, multiple models of learning evaluation and class action research.	The debriefing of Teaching Practice Program I was given in the campus formally while the debriefing of Teaching Practice Program II in the partner schools were given non-formally when the students performed the pre-Teaching Practice Program activities. The debriefing was a refreshment and the materials were as follows: the concept of Teaching Practice Program, the basic concept of Vocational High School, the design of lesson plan, the basic skills of teaching, multiple teaching-learning strategic methods/models, multiple learning sources/media, multiple models of learning evaluation and class action research.	Effective
8	The main activities in the Teaching Practice Program II were the educational and non-educational practices in the vocational high schools individually.	In the Teaching Practice Program II activities the students had implemented the educational and non-educational practices individually within the vocational high schools.	Effective
9	The Mentoring Lecturers of Teaching Practice Program I had educational background in the domain of education altogether with the competence and the commitment on their duty.	The Mentoring Lecturers of Teaching Practice Program I had already had educational background in the domain of education altogether with the competence and the high commitment on their duty but not all of the lecturers had a high commitment on their duty due to multiple conditions and limitations.	Effective

No.	The Product Specifications that Had been Planned	The Product Specifications that Had been Resulted	Note
1	2	3	4
10	The Mentoring Lecturers of Teaching Practice Program II should be those of Teaching Practice Program I (if it was possible), should have educational background in the domain of education, should be competent, should have backgrounds of study program that were similar to the students and should have commitment on their duty.	The Mentoring Lecturers of Teaching Practice Program 2 had been appointed from those of Teaching Practice Program 1 and had already had educational backgrounds in the domain of education, should be competent, should have backgrounds of study program that were similar to the students and should have commitment on their duty.	Effective
11	The supervising teachers in the Teaching Practice Program II were the ones who had educational backgrounds in the domain of education and of study program that were similar to the students along with the commitment on their duty.	The supervising teachers in the Teaching Practice Program 2 had been the ones who had educational backgrounds in the domain of education and of study program that were similar to the students altogether with the commitment on their duty.	Effective
12	The evaluation of Teaching Practice Program I was performed by the Mentoring Lecturers of Teaching Practice Program I and the evaluation of Teaching Practice Program II was performed by the supervising teachers of the partner schools and the Mentoring Lecturers of Teaching Practice Program II.	The evaluation of Teaching Practice Program I had been performed by the Mentoring Lecturers of Teaching Practice Program I. The evaluation of Teaching Practice Program II had been implemented by the supervising teachers and the Mentoring Lecturers of Teaching Practice Program II.	Effective

Based on the comparison of product specification that had been defined and the product specification that had been resulted in the final Teaching Practice Program model “KPrIP2,” the researcher would like to conclude that 9 (nine) product specifications had been effective while the other 3 (three) product specifications had been less effective.

Another data that might be implemented as the parameter complimentary in the definition of the effectiveness of Teaching Practice Program final model was the final score of Teaching Practice Program students. The score of the students during the stage I experiment as well as the stage II experiment might be viewed in the appendix of research subjects’ score list.

Based on the comparison of product specifications that had been defined and the

product specifications that had been resulted, the opinions of mentoring lecturers, officials of vocational high schools, the supervising teachers of vocational high schools and the Teaching Practice Program scores attained by the students who had taken the program, the researchers found that final Teaching Practice Program “KPrIP2” had been **effective**.

The aspect of efficiency in the research was directed to the efficiency of funding that had been spent in order to achieve the objective that had been defined. For example, the researcher would like to provide the comparison of payment (the transportation and other fees) for the mentoring lecturers of recent Teaching Practice Program model and those of Teaching Practice Program entitled “KPrIP2” that had been designed.

Table 2. The comparison of payment for the mentoring lecturers of Teaching Practice Program

Recent Teaching Practice Program Model			
Number of Students	Number of Lecturers	Teaching Practice Program I Payment Scheme (ratio 1 : 10)	Teaching Practice Program II Payment Scheme (ratio 1 : 40)
80	8	8 x Rp.500.000,- = Rp.4.000.000,-	2 x Rp.2.000.000,- = Rp.4.000.000,-
Total		Rp.8.000.000,-	
“KPrIP2” Teaching Practice Program Model			
Number of Students	Number of Lecturers	Teaching Practice Program I Payment Scheme (ratio 1 : 10)	Teaching Practice Program II Payment Scheme (ratio 1 : 100)
80	8	8 x Rp.500.000,- = Rp.4.000.000,-	8 x Rp.2.000.000,- = Rp.16.000.000,-
Total		Rp.20.000.000,-	

Based on the above description and the definition of efficiency as the objective achievement by means of employing human resources, time and cost as minimum as possible, the Teaching Practice Program “KPrIP2” that had been designed was said to be inefficient from the aspect of funding because the university should provide higher incentive due to the increasing number of mentoring lecturers in comparison to the recent Teaching Practice Program model. The calculation was merely a very simple calculation. However, regarding the importance of Teaching Practice Program activities for the teacher candidates and for the LPTK in order to preserve the quality of the graduations, the inefficiency might be overcome by means of the principal policy such as defining the multiple schemes of payment or looking for alternative sources of funding in order to cover the existing cost.

CONCLUSIONS

Conclusions

Based on the data analysis toward the stage I Teaching Practice Program model experiment and the stage II Teaching Practice Program model experiment that were conducted in order to improve the quality of vocational high school teacher candidates competences in the engineering study program, the researcher would like to draw the following conclusions.

The Teaching Practice Program model for the Department of Engineering Surabaya State University consisted of 3 (three) domains namely cooperation, individual training and mentor. The domain of cooperation referred to the cooperation between the vocational high schools and the offices of education in the province/county/city level. Then, the domain of individual training referred to the students who performed the teaching practice in the simulation formation of peer-teaching, micro-teaching and real teaching. Next, the domain of mentor referred to the lecturers who guided or mentored the participants or the students of Teaching Practice Program I, the lecturers who were appointed as the Mentoring Lecturers of Teaching Practice Program II and the supervising teachers in the vocational high schools.

The Teaching Practice Program model for the Department of Engineering was perceived to have several weaknesses in the three domains. In the domain of cooperation, the Department of Engineering Surabaya State University, the vocational high schools and the offices of education in the province/county/city level were not in the formation of partnership that involved the three parties from the planning to the evaluation; however, the domain of cooperation was only implemented to the planning in the activities of Teaching Practice Program II. In the domain of individual training, the students oftenly performed the simulation of peer-teaching only in the class (theory) and not in the laboratory/garage (practice). In the micro-teaching activities, not all of the students who attended the Teaching Practice Program performed the activities due to several limitations. In the domain of mentoring lecturers, there was an incontinuity between the mentoring lecturers of Teaching Practice Program I and those of Teaching Practice Program II. In addition, there was different educational background between the Mentoring Lecturers of Teaching Practice Program II and the students and, as a result, the Teaching Practice Program did not operate effectively.

On the contrary, the strength of the recent Teaching Practice Program model for the Department of Engineering was the high commitment from several officials such as the officials of Department of Engineering, the managers of Teaching Practice Program for the Department of Engineering, the managers of UPT P-4 Surabaya State University, the Mentoring Lecturers of Teaching Practice Program and the students in preparing the competence engineering study program teacher candidates.

The development of Teaching Practice Program model was performed by adopting the methods of R & D proposed by Borg & Gall by means of two stages, namely the research stage and the development stage. The research stage was performed in an effort to find the initial data in order to generate the conceptual Teaching Practice Program model. Then, the development stage was performed by asking for opinions from the experts of education and Teaching Practice Program in order to be revised and to be improved as the hypothetical Teaching Practice Program model.

Next, the hypothetic Teaching Practice Program model was operated in the limited experiment and the results was the stage I Teaching Practice Program model and the model was operated in the expanded experiment in order to be improved as the stage II Teaching Practice Program model. The last but not the least, the researcher performed a focus group discussion (FGD) in order generate the final model that would be stated as the final product of the effective Teaching Practice Program for the Department of Engineering Surabaya State University.

The final model of Teaching Practice Program for the Department of Engineering had 4 (four) product components namely: partnership cooperation, pre-Teaching Practice Program, individual training and professional mentors; the final model then would be entitled “**KPrIP2**.” The Teaching Practice Program model was generated in order to improve the Teaching Practice Program that had been operated in the Department of Engineering Surabaya State University in order to improve the quality of the programs and of the students as the vocational high school teacher candidates in the engineering study program.

The “**KPrIP2**” Teaching Practice Program was effective in terms of preparing the objective of Teaching Practice Program, namely to prepare teaching staffs who had professional, paedagogic, personal and social competences. However, from the aspect of efficiency, the “**KPrIP2**” Teaching Practice Program model might be stated as inefficient. The efficiency that the researcher referred to was the efficiency in the aspect of economy in which there had been increasing budget due to the increasing number of mentoring lecturers for the Teaching Practice Program.

Suggestions

Several suggestions that the researcher would like to provide from the implementation Teaching Practice Program model research and development in order to improve the quality of vocational high school teacher candidates in the engineering study program were as follows.

For the Operating Unit of Teaching Practice Program Surabaya State University, the researcher would like to provide the following suggestions: (a) the unit should

develop a partnership cooperation with the offices of education in the province/county/city level, the association of teacher profession and the vocational high schools in terms of planning, implementation and evaluation toward the Teaching Practice Program activities periodically; (b) the unit should create a shared consortium with the LPTK in order to equalize the perception toward the implementation of pre-service Teaching Practice Program; (c) the unit should promote the pre-Teaching Practice Program activities to be the decree unit if the Teaching Practice Program time allocation and the implementation period had not been changed; (d) the unit should have coordination with the leaders in order to accomodate the continuity of Mentoring Lecturers of Teaching Practice Program I to be the Mentoring Lecturers of Teaching Practice Program II with a requirement of having educational backgrounds that were similar to the students or the participants of Teaching Practice Program with the maximum ratio of lecturer and students 1:10; (e) the unit should develop a qualification-based Teaching Practice Program model for the vocational high school teachers in the engineering study program; and (f) the unit should increase the number of micro-teaching laboratories altogether with the equipment so that each of the Teaching Practice Program students or participants would perform the microteaching individually (without being represented).

For the offices of education in the province/county/city level and the association of professional teacher, the researcher would like to suggest that the two institutions would establish partnership with the LPTK in an effort to improve the educational quality in the LPTK especially in the Teaching Practice Program as a medium of actual teaching practice for the future Indonesian teachers.

For the educational academics, the researcher would like to suggest that the academics would really preserve the idealism and the professionalism in order to prepare the future Indonesian teachers.

For the LPTK developers, the researcher would like to suggest that the institutions would preserve the continuity and would increase the quality of Teaching Practice Program implementation in the LPTK by means of policy and funding support.

For the educational researchers especially the vocational education researchers, the researcher would like to suggest that the researchers would develop or would follow up the results of the research by developing the other Teaching Practice Program models that were more effective.

For the students of the Department of Engineering, the researcher would like to suggest that the students would be aware of the importance of the activities as an effort to train themselves in order to be the competent engineering study program teachers in the vocational high schools where they would be assigned.

Further Product Dissemination and Development

The final stage of R & D research methods, according to Borg & Gall (1983), was the dissemination of the product as a result of the research. The dissemination of the product might certainly be conducted after the research had been approved by the approval team in the promotional session of the Doctoral Degree within the Undergraduate Program of Yogyakarta State University. The product dissemination then should be planned in the form of consignment to any media such as print media, educational journal, educational seminar in the regional level, educational seminar in the national level, educational seminar in the international level and alike.

Furthermore, the researcher would develop the results of the research internally and externally. Internally, the researcher would plan to have more socializations on the importance of the Teaching Practice Program (“KPrIP2”) model to the fellow colleagues in order to improve the quality of the teacher candidate especially the teacher candidates in the engineering study program. The most important matter in the socialization was that there should be involvement from the Offices of National Education in the province/county/city level as a team of educational consortium in planning, implementing and evaluating the Teaching Practice Program activities consistently.

Externally, the researcher would like to keep the communication with the vocational high schools in the engineering study program in terms of the increasing developments such as the curriculum development, the learning

facility development, the learning method development and alike.

In addition, the results of the research might be implemented as a matter of reference in the educational policy making, especially regarding the association, the continuity and the follow up between the Teaching Practice Program Activities in the educational undergraduate program and those of the teachers’ professional education program (*Program Profesi Guru* or PPG). The researcher expected that there would be a resulted policy based on the results of the research so that the materials of Teaching Practice Program in the educational undergraduate program would not be overlapped, would not be synchronized or would not be associated from one to another. The educational undergraduate program still generated the competence teacher candidates while the teachers’ professional program still generated the competent teachers.

REFERENCES

- Alcorn, N. (1999). *To the fullest extent of his powers: ce beeby’s life in education*. Wellington: Victoria University Press.
- Anonymous. (2014, March 1). Saatnya revitalisasi pendidikan calon guru. *Kompas*.
- Borg, W. R., & Gall, M. D. (1983). *Educational research: An introduction* (4th ed.). New York: Longman Publishing.
- Department of National Education. Undang-Undang Nomor 20 Tahun 2003 tentang Sistem Pendidikan Nasional (2003).
- Department of National Education. (2006). *Peraturan Menteri Pendidikan nasional nomor 22 tahun 2006 tentang standar isi*. Jakarta: Department of National Education.
- Depdiknas. Undang-Undang No. 14 Tahun 2005 tentang Guru dan Dosen (2005). Jakarta.
- Dharma, S. (2009, October 27). Penguasaan materi pelajaran lemah. *Kompas*.
- Fullan, M. (2007). *The new meaning of educational change* (3rd ed.). New York: Teachers College Press.

- Hammond, L. D., & Bransford, J. (2005). *Preparing teachers for a changing world what teachers should learn to do and be able to do*. San Francisco: Jossey-Bass Publishing-Wiley & Sons.
- Jalal, F., & Bisri, M. (2001). *Education reform in the context of regional autonomy: the case of Indonesia*. Jakarta: Ministry of National Education and National Development Agency – Republic of Indonesia & World Bank.
- Menteri Pendidikan Nasional. Peraturan Menteri Pendidikan Nasional Republik Indonesia Nomor 16 Tahun 2007 tentang Standar Kualifikasi Akademik dan Kompetensi Guru (2007).
- Menteri Pendidikan Nasional. Peraturan Menteri Pendidikan Nasional Republik Indonesia NOMOR 8 tahun 2009 tentang Program Pendidikan Profesi Guru Pra-jabatan (2009).
- Miles, M. B., & Huberman, A. M. (1992). *Analisis data kualitatif (Terjemahan Tjetjep Rohendi Rohidi)*. Jakarta: Universitas Indonesia.
- Presiden RI. Peraturan Pemerintah RI Nomor 74 Tahun 2008 tentang Guru (2008).
- Rizali, A., Indra, D. S., & Dharma, S. (2009). *Dari guru konvensional menuju guru profesional*. Surabaya: PT. Grasindo.
- Samani, M. (2012). *Profesionalisasi pendidikan*. Surabaya: Unesa University Press.
- Samani, M. (2013, October 10). Pendidikan calon guru diperkuat. *Kompas*.
- Sugiyono. (2012). *Metode penelitian kuantitatif, kualitatif, dan R&D*. Bandung: Alfabeta.
- Suparlan. (2008). *Menjadi guru efektif*. Yogyakarta: Hikayat Publishing.