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Collaborative Teacher Certification Program: An innovative program for Technical and Vocational Teacher Education

Abstract

In Indonesia, the teacher certification program is based on Law Number 14/2005 regarding Teachers and Lecturers. According to the act, becoming a professionally certified teacher prerequisites four distinct competencies: pedagogic competence, personality competence, social competence and professional competence. One avenue toward the attainment of teacher certification is to participate in a program called Professional Teacher Education (Pendidikan Profesi Guru - PPG), which is intended to produce certified vocational teachers who have professional skills in their vocational field. In certain vocational fields, PPG is currently being pioneered in the form of collaborative teacher certification programs. The purpose of this paper is to define and describe this sort of teacher preparation program, which is facilitated by the government to increase the number of teachers certified to teach at vocational schools (SMK), mainly for fields of study that are not addressed by the Teacher Education Institutes (LPTK). The method used for this study was a review of documents related to the program. This study finds that prior to the implementation of this program, LPTK should collaborate with partner institutions to determine partnership patterns, to define a collaborative curriculum and evaluation scheme that guarantees all graduates will have all four competencies required for the teaching of their vocational subjects.

1 Introduction

Indonesia is a country developing in an era of globalized economies. This condition requires its industries to be competitive within regional as well as global markets, which in turn requires that Indonesia develops its human resource capacities in both the near and the far term. The prescient question is: which aspects of Indonesia's workforce should be purposefully cultivated? The answer is: the skills, competences, and willingness of the Indonesian workforce. It is necessary to increase the added value of Indonesian human resources through education and training in order to upgrade the skills and competences of the young people who are entering the workforce. It is also important that the skills and competences of the current workforce are improved so that Indonesian labour can cope with technological and market changes.

The national education system has undergone many changes in response to the various challenges and demands which emerged due to globalization. These changes are marked by governmental legislation and regulations relating to education such as the National Act No. 20/2003 on the National System of Education, Government Regulation No. 19/2005 on National Education Standards, and the Act No. 14/2005 on Teachers and Lecturers, which

states that all teachers, without exception, must successfully complete at least a four-year degree and a one-year Professional Teacher Education (PPG) program to qualify for teacher certification. This requirement has impacted the pre-service teacher training sector significantly. Furthermore, for graduates of Teacher Education Institutes (LPTK), a post-graduate professional qualification is required to ensure that these teachers are better prepared for their duties in the job.

Currently, there are quite a number of study programs and skill competences taught at the vocational high school (SMK) level; however, not all of the corresponding subject areas are available at the LPTKs. LPTKs are not able to prepare vocational teachers for all vocational groups, with deficiencies in teachers graduating in several different fields of study (Hanafi & Soeharto, 2011). This is the result of the expansion of vocational courses at a faster pace than of the teacher education programs at LPTKs. Ideally for each new course in vocational schools, there should be teachers who are certified to teach the course.

Table 1 shows the study programs at SMK and the availability of study programs at LPTKs based on the spectrum of skills on secondary vocational education.

Table 1: **The study programs at SMK and LPTK**

Area of Study Program	Group of Skills Competency	Study Program(s)	
		SMK	LPTK
Technology and Engineering	Technology (66)	18	10
Information & Computer Technology	Information Technology (9)	3	2
Health and Social	Health (5)	1	-
	Social Nursing (1)	1	-
Arts, Crafts, and Tourism	Arts (10)	2	2
	Tourism (2)	1	1
	Design and Production of Kria (5)	1	1
	Home Economics & Technology (5)	3	3
Agribusiness and Agro Technology	Agribusiness (11)	4	-
	Farming (2)	2	-
	Forestry (1)	1	-
Administration and Finance	Office Administration (1)	1	1
	Finance (2)	1	1
	Marketing (1)	1	1
Total	Skills of Competency (121)	40	22

Source: Hanafi & Soeharto, 2011

Policy related to the provision of teachers is under the coordination of the Higher Education department of the Ministry of Education, while authority to open vocational courses rests with the department of Secondary Education. This results in discrepancies between teacher preparation and the opening of vocational courses.

Related to the spectrum of skills in secondary vocational education (DGPSE, 2008)[1], there are 18 study programs at SMK in the field of engineering and technology with 66 attendant skill competencies. At the same time, there are only 10 study programs available at LPTK, along with 29 skill competencies to serve the study programs at SMK.

Around half of the study programs at SMK are not yet available in LPTK, such as aero-plane technology, shipping engineering, textile technology, graphical technology, geology and mining, industrial instrumentation, chemical engineering, sea transportation, industrial technology, and oil technology.

There are three study programs at SMK in the field of information technology and communications with nine competencies. However, LPTK has only two study programs with five skill competencies; broadcasting technology is not yet available at LPTK. Study programs in health areas such as health and social nursing, which entail six competencies, are not yet available at LPTK.

The study programs in arts, crafting, and tourism are spread over seven study programs with 22 skill competences at SMK, and LPTK offer most of these study programs except textile production and design, husk, ceramics, metals, and woods.

The agri-business and agro-technology areas have seven study programs with 14 skill competences at SMK, but LPTK do not have any study programs related to this area.

All study programs in business and management are available at LPTK, and consist of three study programs: administration, financial, and commercial trading. These programs further entail four competencies: office administration, accountancy, banking, and marketing.

Thus, of the 40 existing study programs which are offered in vocational schools (SMK), only 22 study programs are available at LPTKs (55.0%), while the rest have not yet been prepared by LPKT regardless of the need of SMKs. Therefore, it is necessary to find a solution that meets the requirements set by Law 14/2005 and Government Regulation No. 74/2008, which state that teachers are required to have academic qualifications, the four competencies, an educator certificate, physical and mental health, and the ability to achieve national education goals (article 2). The minimum academic qualification of teachers is a bachelor's degree relevant to the subjects they teach. The teacher competencies include pedagogical competence, personal competence, social competence, and professional competence acquired through professional education. Certificates for teachers who are acquired through PPG are organized by public or private universities that have accredited study programs and are validated by the Government.

[1] Note: the spectrum of skills on secondary vocational education is being revised

2 Collaborative Teacher Certification Program

The collaborative teacher certification (CTC) program is a prototype teacher professional education program of one year duration which relies on cooperation between LPTK and institutional partners (universities or polytechnics) that have human resources relevant to a certain vocational education program. This program aims to provide a teacher education model which is expected to produce competent and qualified pre-service teachers as professional teachers in vocational subjects. The vocational subjects which are prioritized in this program are the study programs which LPTK do not yet offer, and focus mostly on uncommon categories such as agriculture, aeronautical engineering, marine engineering, textile engineering, graphics engineering, mining geology, tourism, water resources management, agribusiness, and navigation. The implementation of this program requires (1) the recruitment of candidates - they must have graduated from a relevant study program, (2) collaboration between LPTK as an organizer and partner institutions, (3) the determination of patterns of partnership between LPTK and the partner institutions that enable the creation of collaborative curricula and evaluations that are able to guarantee the graduates develop competences in education and the vocational subjects. After completing their studies, the participants will get two certificates: an educator certificate and a vocational skills certificate. Prior to 2013, the collaborative teacher certification (CTC) program graduated teachers in several vocational fields such as agriculture, freezing and air conditioning techniques, aeronautical engineering, marine engineering, textile engineering, graphics engineering, mining geology, tourism, water resources agribusiness, farming agribusiness, automotive engineering, information and communication technology, and textile technology.

2.1 Implementation of the CTC Program

2.1.1 The organizers

In 2011, the Directorate of Educational Personnel, Directorate General of Higher Education (DGHE) commissioned eight institutions as organizers of the collaborative teacher certification program to prepare teachers in the fields of agriculture, namely: Universitas Negeri Padang in collaboration with Politeknik Pertanian Payakumbuh, Universitas Negeri Jakarta in collaboration with Politeknik Negeri Lampung, Universitas Negeri Yogyakarta in collaboration with Politeknik Pertanian Kupang, and Universitas Negeri Malang in collaboration with Politeknik Pertanian Jember. The total number of participants in teacher education programs was 120, and each pair of institutions managed 30 participants. In 2012, the CTC program was expanded both by number and variety of types of study programs. For these programs, the DGHE commissioned 12 LPTKs and 20 partner institutions as the organizers to prepare vocational teachers in productive subject groups.

2.1.2 Selection and recruitment process

The program is intended to meet the shortage of vocational teachers in various regions in Indonesia. In the process of selection, the CTC program is open to all eligible candidates. To

be eligible, applicants must hold bachelor's degrees (S1) or Diploma (D-IV) and fulfil the following requirements:

1. Be willing to participate in education in accordance with existing regulations
2. Be willing to be assigned to a predetermined region for at least 2n+1; where n is the number of years of study
3. Be of good health, evidenced by a medical certificate
4. Be free of drugs (narcotics, psychotropic substances, and other additives), evidenced by a certificate from a competent authority
5. Pass an online test

2.1.3 Curriculum and model of collaborative program

The structure of the curriculum was developed based on the demands of competencies for a professional teacher with the authority to teach in a particular field of study at an SMK. Based on the goals and identification of potential participants (S1 or D-IV graduates) from educational and non-educational fields of study, the curriculum was developed in sequential semesters.

In the first semester, the curriculum is designed to strengthen the field of study and pedagogical skills (block-1) and to provide a workshop of subject-specific pedagogy (SSP) for the vocational field (block-2). To strengthen pedagogy, all participants study five subjects: developmental psychology, vocational educators professional training, the methodology of vocational learning, evaluation of learning, and classroom action research. To strengthen areas of expertise, participants learn a number of core subjects in the appropriate study program. In the SSP workshop, all participants prepare instructional materials in accordance with their respective areas of expertise.

In the second semester, students take part in practical field experience (block 1), then prepare for the competency test to obtain a teaching certificate and a certificate of expertise in their respective fields (block-2). In practical field experience, each participant is required to engage in classroom teaching for a designated amount of time. At the end of semester two, all participants are required to sit the competency test in order to obtain a teaching certificate. Figure 1 shows a model of the collaborative teacher certification program.

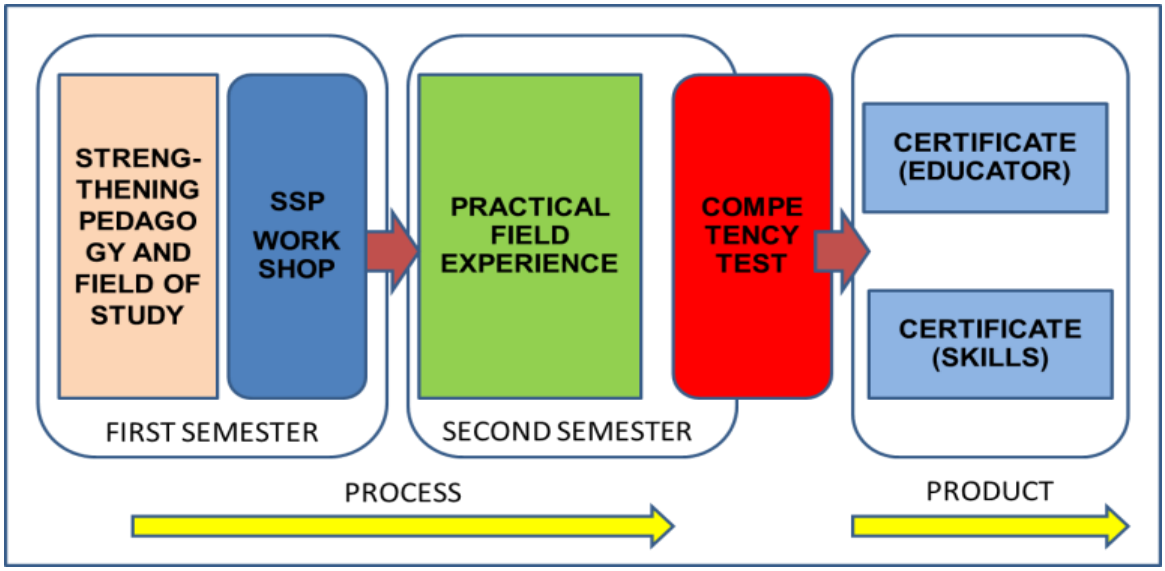

Figure 1: Model of CTC Program

2.2 Achievements of the CTC Program

2.2.1 Agricultural sector

Of 118 participants in the field of agriculture, 116 participants successfully completed the D-IV program. To get the teacher certification, they subsequently completed a CTC program organized by LPTK and their partner institutions. The organizers of the program and the number of participants graduated in the field of Agriculture are shown in Table 2.

Table 2: **The number of graduates on agriculture**

LPTK and partner institutions	field of study	number of participants	passed	not passed	%
UNJ Jakarta & Polinela Lampung	agribusiness of plantations	30	30	0	100,0
UM Malang & Politani Jember	agribusiness of breeding and tissue culture (kultur jaringan)	19	18	1	94,7
	agribusiness of livestock production	10	9	1	90,0
UNY Yogyakarta & Politani Kupang	agribusiness of agriculture counseling	30	30	0	100,0
UNP Padang & Politani Payakumbuh	agribusiness of livestock production	7	7	0	100,0
	agribusiness of plantations	22	22	0	100,0
total		**118**	**116**	**2**	**98,3**

2.2.2 *Other study programs*

In 2012, the government expanded its collaborative teacher certification program by increasing the number of providers and courses. The organizers of the collaborative teacher certification program and the number of participants who graduated in the field of other study programs are shown in Table 3.

2.3 Discussion

As a pilot program that aims to meet the shortage of teachers in certain vocational fields, especially in those fields, for which LPTK do not offer regular teacher education programs, the collaborative teacher certification (CTC) program is considered a success. However, there are some problems and constraints in the implementation, mainly related to the fields of study offered by this program, all of which are greatly needed by the industry. There is a limited number of candidates, as many potential participants prefer to work rather than take part in the CTC program. Another constraint lies in the selection and recruitment process. Many candidates are not eligible to participate in the selection because they are not registered as a student in the National Database (PDPT). This is a requirement for candidates to join the program because it ensures that participants are properly registered as students at their university and enrolled in the PDPT. In addition, the educational background of participants to enrol in a particular area of expertise derives from study programs that do not completely match, even though they are relevant. For example, to join the aircraft engineering study program, there are no candidates available that have studied in that discipline area. Based on consideration by the experts, candidates from deviating educational background were allowed to enrol in the program, such as from electrical engineering, mechanical engineering, electrical engineering education, and mechanical engineering education.

Table 3: **Number of graduates in other study programs**

LPTK and partner institution	field of study	number of participants	passed	not passed	%
UNJ Jakarta & STPI Curug	Aircraft Technology	11	11	0	100,0
UNM Makasar & Politani Pangkep	Agribusiness of Production of Aquatic Resources	9	9	0	100,0
	Seafaring	11	11	0	100,0
UM Malang & Polinema Malang	Automotive Engineering	17	17	0	100,0
Unima Manado & Faculty of Animal Science Univ. Sam Ratulangi	Agribusiness of Livestock production	2	2	0	100,0
Unimed Medan & Politeknik Lhokseumawe	Automotive Engineering	8	7	1	87,5
Unimed Medan & Faculty of Agriculture Univ. Sumatera Utara	Agribusiness of Production of Aquatic Resources	19	19	0	100,0
UNP Padang & Faculty of Mining, ITB	Mining Geology	24	24	0	100,0
UNP Padang & Polliteknik Negeri Padang	ICT	13	13	0	100,0
Unnes Semarang & Faculty of Engineering, Univ. Diponegoro	Shipbuilding Technique	8	8	0	100,0
Unesa Surabaya & PENS	ICT	35	35	0	100,0
UNY Yogyakarta & Faculty of Mining, UPN	Mining Geology	27	27	0	100,0
UNY Yogyakarta & STT Kedirgantaraan	Aircraft Technology	9	9	0	100,0
Undiksha Singaraja & STT Pariwisata Bali	Tourism	14	10	4	71,4
UPI Bandung & Polban Bandung	System engineering and Air Cooling	14	14	0	100,0
UPI Bandung & STT Tekstil Bandung	Textile technology	16	16	0	100,0
UNS Surakarta & Sekolah Vokasi UGM	Automotive Engineering	26	25	1	96,2
Total		**263**	**257**	**6**	**97,2**

Another constraint is the limited capacity of the industry to provide practical experience, which can affect levels of competence. To ensure high levels of competence, other facilities may prove necessary to achieve the goal of producing professional teachers. Yet another limiting factor is the availability of dormitories for participants. Currently, not all providers have dorms, so the organizers are not well prepared to provide for the strengthening of

personality and social competencies in accordance with the demands of a professional teacher. In the implementation of the practice field experience (PPL), the CTC program faced a number of problems such as the lack of working professional models (e.g. in the field of Aircraft vocations, the teachers are mainly retired teachers or retired Air Force members). A number of schools in the CTC program even have a limited amount of equipment, resulting in inadequate PPL practices.

To overcome the problem of potential participants not being registered in the National Database, universities are encouraged to re-register participants by following the applicable procedures and regulations. A shortage of potential applicants also can be caused by applicants coming from a related study program, e.g. from geology with respect to mining engineering or reverse, but lack depth of skill in a specific discipline area. This may be resolved by providing basic introductory modules that act as a bridging program for more detailed study in a CTC program. The provision of supporting facilities such as dormitories will ensure that the graduates of this program will have competencies in accordance with the demands of the regulation. Moreover, an effort should be made to increase the intensity of learning theory and practice of skill competencies to increase understanding as a professional teacher. Of most importance is that coordination between organizers and university and industry partners be improved so that the implementation of learning theory and practice, and the implementation of industry practice can be monitored efficiently to maximize the quality of learning outcomes.

3 Conclusions and recommendation

The CTC program to prepare professional teachers at SMK has been collaboratively pioneered by LPTKs and their partner institutions. Implementation of the program is conducted through an intensive cooperation that begins with proper preparation, good execution by the organizers, and the completion of the program with an evaluation. The programs have produced a number of graduates with adequate knowledge, skills and attitudes to enable them to become professional teachers. With the completion of this program, the graduates have reached level 7, the level of "Professional" in the Indonesian National Qualifications Framework (KKNI), thereby fulfilling the requirements to become a teacher in accordance with the mandate of the law.

Based on field experience in the implementation of the CTC program, a few recommendations to conduct the program in the future can be given.

1. Selection and recruitment rules need to be defined and adapted to other, similar programs, so that they become a standard guideline.
2. Implementation of teaching and learning should use the block system. The first block should be dedicated to pedagogy courses and increasing content-area expertise, the second block should focus on the development of learning tools, and the third block should provide practice field experience and preparation for the competency test.

3. Dormitories should be an essential pre-requisite as they have a role in the development of a character education curriculum that shapes the character of prospective vocational teachers through the function and role of the dormitory.
4. The permanent legitimacy of the regulations, implementation guidelines, and quality assurance systems that are used as a basis for the implementation of the program should be increased.
5. Agencies and related institutions should collaborate in order to prepare graduates to teach in the appropriate vocational school.

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References

DGHE (2012). "Panduan Rintisan Program Kolaboratif PPG SMK Produktif."

DGHE (2013). "Laporan Program Kolaboratif PPG SMK Produktif."

DGPSE (2008). "Spektrum Keahlian Pendidikan Menengah Kejuruan." SK Dirjen Mandikdasmen No.251/C/Kep/MN/2008.

Hanafi, I. & Soeharto (2011). The Spectrum of Competences and Preparation of Technical and Vocational School Teacher in Indonesia. Paper presented at International Seminar on Learning, Community, and Technology conducted by Engineering Faculty, Universitas Negeri Jakarta in Jakarta.

Indonesian Government Regulation No.19/2005 regarding National Education Standards.

Indonesian Government Regulation No.74/2008 regarding Teachers.

National Act No. 20/2003 regarding the National System of Education.

National Act No. 14/2005 regarding Teachers and Lectures.

Presidential Regulation No. 8/2012 regarding the Indonesian National Qualifications Framework (KKNI).

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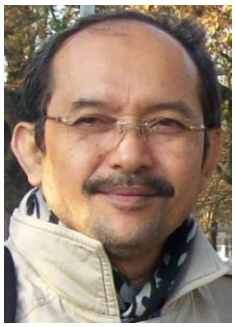

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