

Development of vocational high school teachers in Daerah Istimewa Yogyakarta

P Sudira¹, Pardjono¹, and S Saputro¹

¹Graduate School Universitas Negeri Yogyakarta, Indonesia

Abstract. The Presidential Instruction Number 9 of 2016 concerning Vocational Revitalization instructs the Minister of Education and Culture and the Minister of Research on Technology and Higher Education to: (1) create a roadmap for developing SMK; (2) perfecting and harmonizing the SMK curriculum with competencies according to the needs of graduate users; (3) increasing the number and competence of educators and vocational education staff; (4) improve access to vocational school certification and vocational accreditation; (5) accelerating the provision of vocational teachers through education, equalization and recognition; and (6) developing study programs in universities to produce vocational teachers needed by SMK. This study examines teacher resource development planning for SMK and the obstacles experienced in implementing teacher resource development programs in SMK Rujukan in DIY. The survey was conducted at 15 SMK Rujukan. Data collection uses a closed and open questionnaire and analyzed using quantitative and qualitative techniques. Results of the study show that the development of vocational teacher resources is done through professional development, career development, and competency development. The competence of vocational teachers in research and publication is still low, and teacher career guidance is still low. Internal constraints of teacher competency are still lacking and external constraints demands industrial support.

Keywords: Teachers Development, SMK Rujukan, Teacher Competencies

1. Introduction

Vocational High Schools (SMK) throughout Indonesia continue to be encouraged and developed as producers of middle-level workforce to meet human resource needs in various fields of work. Vocational Schools in the Daerah Istimewa Yogyakarta (DIY) were built to meet the needs of workers supporting DIY development. Daerah Istimewa Yogyakarta up to 2018 has 217 Vocational Schools with a composition of 50 (23.04%) with a state status and 167 (76.96%) with a private status. Sixteen of them are SMK Rujukan which have been made as revitalizing Vocational Schools. SMK Rujukan is a Vocational School that has implemented the National Standard Vocational Program plus. SMK Rujukan is used as a sister for other Alliance Vocational Schools. Conditions for SMK, Students and Teachers in 2017/2018 are based on 9 skill areas such as Table 1 below.

Table 1. Condition of SMK, students and teachers in DIY based on expertise in 2017/2018

No.	Skill Area	Number of SMK			Number Student			Number of Teacher			Teacher-Student Rasio
		State	Private	Total	State	Private	Total	State	Private	Total	
1.	Tech-Eng	29	89	117	17.003	20.657	37.660	394	3.336	3.730	1 : 10
2.	En-Min	6	1	7	446	60	506	124	38	162	1 : 3
3.	ICT	26	72	98	5.074	6.638	11.712	1.256	2.010	3.266	1 : 3,5
4.	HSW	1	35	36	64	1.509	1.573	16	288	304	1 : 5,2
5.	Agri-Agro	7	7	14	1.836	331	2.167	433	155	588	1 : 3,68
6.	Mar	3	2	5	269	107	376	62	33	95	1 : 3,96
7.	Bis-Man	16	52	68	7.011	7.362	14.373	1.151	1.969	3.120	1 : 4,61
8.	Tour	18	42	60	7.499	2.735	10.234	1.200	742	1.942	1 : 5,27
9.	ACI	22	17	39	1.594	576	2.170	419	138	557	1 : 3,90

Source: processed from the Vocational Data Book in 2017

Information:

1. Tech-Eng: Technology and Engineering
2. En-Min: Energy and Mining
3. ICT: Information and Communication Technology
4. HSW: Health and Social Work
5. Agri-Agro: Agribusiness and Agrotechnology
6. Mar: Maritime
7. Bis-Man: Business and Management
8. Tour: Tourism
9. ACI: Art and Creative Industry

The quantitative ratio of teachers and students in DIY is ideal far below national provisions, namely 1:14. Qualitatively, this ratio does not meet the needs of quality SMK because there are more non-vocational teachers than vocational teachers. Teachers in private SMK have not been prepared according to qualification standards. National data recorded good vocational teachers only 20%. The number of private SMK and the number of students in private SMK is 3.34: 1 more than in state SMK. The average quality of teachers in private SMK is below state SMK.

The development of vocational education in SMK in DIY still faces a number of obstacles, among others: (1) there is no good development roadmap for SMK and can be used as a reference for the stages of development of SMK; (2) the contents of the vocational curriculum have not been aligned with the needs of graduates who are very dynamic in the era of disruption; (3) learning in SMK does not yet have work related content learning (work oriented learning, work connected learning, work integrated learning); (4) the number, type and quality of vocational teachers for each expertise program have not been fulfilled; (5) teacher competence in content knowledge, pedagogical knowledge, technology knowledge is still low; (6) access to vocational graduates competency certification is still low; and (7) access to competency certification for knowledge, pedagogical knowledge, technology knowledge for vocational teachers is still low. Among the six problems of developing SMK the problem of the number and quality of teachers is the most basic problem and requires technical completion efforts [1] [20]. Efforts to resolve the problems of vocational education in SMK were overcome through the revitalization program of vocational secondary education according to the presidential instruction of Republic of Indonesia number 9 of 2016.

Professional teachers are the most important innovation agents in the development of vocational education [5] [2]. The disruption era requires vocational teachers who are innovative and ready to create their innovations in various learning programs as real actions. Professional teachers must have

motor skills, intellectual skills, and mental skills, knowledge, moral attitudes as professional educators [19] [4]. Skills of teaching are influenced by mindset, teaching knowledge includes the content of teaching material, principles and strategies of classroom management, selection of methods, media, learning resources, curriculum knowledge, characteristics of students, context of vocational education, goals and basic values of vocational education as world education [12] [13] [14]. Professional skills are very supportive of self progress in a sustainable career [17]. Professional teachers must have skills that are essential in teaching, oriented towards teaching goals [12], sensitive to the situation and development of the world of work, the development of industrial revolution 4.0, digital economy and the era of disruption, skilled in developing training and practicum [8] [9].

The teaching skills for vocational teachers in SMK strongly support the development of graduate competency quality, lifelong learning skills for graduates, job acquisition, and graduate career development. Three important elements related to teaching skills of vocational teachers are: (1) teacher knowledge related to competency standards that should be taught, characteristics of students, curriculum, learning methods, and reflective knowledge about their own skills; (2) decision making through analysis and evaluation before and during teaching, always focus on how to realize the impact of the best learning for students; (3) acting professionally as a teacher in encouraging students' learning skills [8] [14].

The development of teacher professionalism can be done through the development of types of educational study programs that are in accordance with the needs of vocational school teachers, development of vocational teacher professional education, equalization, and recognition of undergraduate or applied engineering graduates. The development of teacher professionalism requires synergies between the government, local government, Education Personnel Education Institutions, Professional Certification Institutions, Institutions of education and skills training, Business and industry, user communities, and Vocational Schools [17]. Development of teacher professionalism in a variety of ever-changing conditions. According to Beijaard [2] requires a good perspective on: (1) vocational knowledge, the context of vocational education, and vocational learning models; (2) the structure of vocational knowledge and vocational learning; (3) the personality of the vocational teacher and his professional life. Loughran [15] in his study found that teacher knowledge is comparable to self-study in the framing and reframing process of his teaching experience. Clandinin and Huber [4] describes the personal and professional life of a teacher through qualitative observation and interviews. Clandinin and Huber found that there was tension in the process of shifting a teacher's personal identity to a professional teacher.

Professional teachers must continue to develop professionalism on an ongoing basis [13] [18]. Local, national and global environmental contexts are an important part of developing vocational teacher professionalism. Korthagen [9] [10] describes a combination of practical experience, reflection, and research conducted by teachers as a very realistic approach to teacher education. Teacher education needs to integrate theory and practice followed by a process of reflection [16]. Deep reflection is a prerequisite for balanced integration between personal and professional life for a teacher [11]. Teacher competency in carrying out learning in class is the real life of a teacher, how teachers build relationships and good communication with students in the process of introducing learning material. The teacher is a leader who practices the value of self-awareness in his identity as a professional teacher and his personal mission. Building teacher professionalism requires a learning teacher community. Husu [6] and Laursen [13] found out how teachers narrate their knowledge through various interactions in the social environment of teacher education. Kane and Russel [7] explain the research findings to teachers in the first year. Beginner teachers tend to represent themselves in teaching like the ways their lecturers teach in college [3].

The development of SMK in DIY is expected to support the vision of DIY development in 2025 as a leading Center for Education, Culture and Tourism Destinations in Southeast Asia. The development of SMK in DIY is also expected to support the achievement of DIY Pancamulia, namely: (1) realizing an increase in the quality of life and livelihoods of people who are just and civilized, through increasing skills and competitiveness of Jogja's competitive human resources; (2) the realization of an increase in the quality and diversity of economic activities of the community, as well as the strengthening of the economy based on local resources (the uniqueness of economic territory) for the growth of community income as well as equitable economic growth; (3) the realization of increased harmony of common life both in the community and in the bureaucracy on the basis of tolerance, tolerance, politeness and togetherness; (4) the realization of the procedures and behavior of the implementation of democratic governance; and (5) the realization of dignified behavior of government administrators on the basis of upholding the values of integrity that uphold honesty, conscience, shame, conscience of guilt and sin when committing irregularities in the form of corruption, collusion and nepotism [19].

The development of SMK through the development of professional vocational teachers is very much needed in the process of achieving the DIY development vision and the DIY Pancamulia mission. The development of vocational teacher professionalism in DIY is a comprehensive and in-depth development related to understanding aspects of vocational education, development of quality of life-life-livelihoods of human resources in DIY, and values of Javanese (Jogja) culture. Professional teachers as national civil apparatus have dignity as vocational educators in vocational schools. This research was conducted to describe: (1) teacher development planning in Referral Vocational Schools in DIY and (2) constraints experienced in implementing the Referral Vocational School teacher development program in DIY; and (3) solutions for implementing the Referral Vocational School teacher development program in DIY.

2. Method

Data collection was carried out on 15 SMK Rujukan in DIY using open and closed questionnaires and interviews. The research respondents consisted of the Principal, Deputy Principal, and Teachers. Data were analyzed based on indicators of the needs of principals and subject teachers. Furthermore, an analysis of deficiencies and excess competency requirements of principals and teachers was carried out using the National standard of SMK Rujukan. Data analysis using quantitative descriptive analysis techniques with very high interpretation for the range of scores between 3.25 to 4, High for the range of scores between 2.5 to 3.25, Low for the score range of 1.75 to 2.5, and Very Low for a range of scores between 1 and 1.75.

3. Result

3.1. The condition of the teacher based on rank, group and education

Most of the Referral Vocational School teachers are young stylists with class IIIa. Referral Vocational Schools still use Non-Permanent Teachers (GTT). Most teacher education is undergraduate and there are still teachers who have Diploma 3 education. Teachers with diploma 3 education do not meet the requirements of teacher law requirements which require a minimum education of undergraduate teachers.

3.2. Teacher Professional Development

Teacher professional development at SMK Rujukan is carried out through programs: participation in MGMP, conducting research, scientific publications, training, industrial

practice, developing learning devices Teacher SMK Rujukan are very active in MGMP activities following training and developing learning tools. The activity in the research activities and scientific publications of SMK Rujukan teachers is still very low. Data on the conditions of professional development of SMK in six aspects of the activity are recorded as Table 2 below.

Tabel 2. Data on Teacher Professional Development Conditions at SMK Rujukan

No.	<i>Teacher Condition at SMK Rujukan</i>		<i>Intepretasi</i>	<i>Keterangan</i>
	Assessment Aspect	Score Average		
1.	Participation in MGMP	4	Very high	Score range 0 s/d/4
2.	Activity in research	2	Low	
3.	Activity in scientific publications	2	Low	
4.	Activity in training	4	Very high	
5.	Activity in industrial practice	3	High	
6.	Activity in the development of learning devices	4	Very high	

3.3. Teacher Career Development at SMK Rujukan

Teacher career development at SMK Rujukan is carried out through activities: supervisory training and prospective school principals. Based on field data, the teachers who received this training were still very few.

3.4. Productive Teacher Competency Development Plan

Development of productive teacher competencies is carried out through programs with priority scale:

- 1). Curriculum training,
- 2). Training on the preparation of learning devices,
- 3). Learning assessment training,
- 4). Learning media development training,
- 5). IT training,
- 6). E-learning training,
- 7). In house traning,
- 8). Field training,
- 9). ISO management training,
- 10). Teacher professional education and training (PLPG / PPG),
- 11). Industrial practice,
- 12). Internship,
- 13). Classroom action research training,
- 14). Development research training,
- 15). Training on scientific article writing,
- 16). Masters and Doctor Schools.

3.5. Adaptive Normative Teacher Competency Development Plan

Development of productive teacher competencies is carried out through programs with priority scale:

- 1). Curriculum training,
- 2). Training on the preparation of learning devices,
- 3). Learning assessment training,
- 4). Learning media development training,
- 5). IT training,
- 6). Field training,

- 7). E-learning training,
- 8). Classroom action research training,
- 9). Development research training,
- 10). In house traing,
- 11). ISO management training,
- 12). Training on scientific article writing,
- 13). Teacher professional education and training (PLPG / PPG)

3.5. Teacher Career Development Plan

Teacher career development is carried out through career development programs with priority scale:

- 1). Teacher promotion in the position of headmaster,
- 2). Rank and position training,
- 3). Training for prospective school principals
- 4). Training of prospective supervisors

4. Discussion

4.1. Development of Professionalism for Young Teachers through MGMP

The condition of the teachers who are mostly young administrators with class IIIa and there are still teachers with GTT status and Diploma 3 education. This condition is still a disadvantageous condition. Young teachers, GTT teachers, and teachers with Diploma 3 education tend to have minimal teaching experience. Teachers with minimal teaching experience have difficulty making learning innovations. According to Kane and Russel's findings, young teachers tend to have teaching styles that mimic the style of teaching their lecturers while at university. Even though the characteristics of students, learning objectives, characteristics of learning materials in SMK are far different from the characteristics of students, learning objectives, characteristics of learning materials at the university.

The high interest of teacher participation in the MGMP, activeness in training, and activeness in the development of learning tools is a supporting factor in the development of vocational teacher professionalism in DIY. Development of professionalism of young teachers at Vocational Schools Referral can be done through their involvement in MGMP forums, training, and development of learning devices. The MGMP Forum is used as a forum for deliberation for the development and strengthening of vocational knowledge, the context of vocational education, and vocational learning models. The MGMP Forum also continues to study the structure of vocational knowledge and vocational learning at the SMK level. Discussions in the MGMP forum can improve the teacher's perspective on vocational education. Through the MGMP forum according to Loughran (2005) findings, young teachers can actively framing and reframing their teaching experiences based on the experience of teaching senior teachers. The interaction of the MGMP forum is important to pay attention to the development of the new context of vocational education such as digital economic development, job disruption, IR 4.0, society 5.0, national and DIY development vision and mission.

The active MGMP forum comprehensively reviews digital economic development, the influence of IR 4.0, disruption of work, society 5.0 and then framing the vision and mission of DIY development to improve the quality of life and livelihoods of people who are just and civilized, through capacity building and skills development Jogja is competitive and the quality and diversity of economic activities in the community are realized. Strengthening the economy based on local resources (uniqueness of economic territory) for community income growth as well as equitable economic

growth. The results of framing the MGMP study were then used as the basis for the development of learning tools according to the fields and expertise programs developed in Vocational Schools. The expectation of learning at Vocational Schools is increasingly characterized by work related learning (work oriented learning, work connected learning, work integrated learning).

Training in the fields of study, curriculum, development of learning tools, assessment of learning, development of learning media, use of IT, e-learning, industrial practices are very important as part of the development of young teacher professionalism. Such training if carried out sustainably will increase the appreciation of young teachers for their profession. As Korthagen's findings (2005) a combination of practical experience in the industrial world, the results of workshops, and reflections carried out by young teachers are very realistic in the development of personal life and the teaching profession. The results of training and industry practices are discussed in the MGMP forum as a process of sharing knowledge and experience. The MGMP Forum then became a learning teacher community. In the MGMP forum each teacher can narrate his knowledge and experience interactively.

The activeness of research and scientific publications includes the constraints of developing the professionalism of reference vocational teachers. The practical experience gained through training and industry practice has not been refined with research and publication experience. As a result, the SMK Rujukan teacher has not been able to develop his experience into a new science of processing from practical experience and reflection such as the study of Korthagen (2005). The teacher has problems in developing research designs. Appropriate and recommended research to be carried out by teachers is research on classroom action and development research. Solutions that can be done to overcome these obstacles are: (1) conducting training and workshops on writing classroom action research proposals and development research; (2) conduct training and workshops on the preparation of classroom action research instruments and development research; (3) conduct training and workshops on data collection on classroom action research and development research; (4) conduct training and workshops on tabulation and data analysis of classroom action research and development research; (5) conduct training and workshops on writing reports and journals / papers on classroom action research and development research; conduct training and workshops submit class action research papers and development research to journals or conferences / seminars. Classroom action research and development research training and workshops can be conducted in collaboration with the Faculties or the LPTK Postgraduate Programs in Yogyakarta such as Yogyakarta State University.

4.2. Teacher Career Development SMK Rujukan

The career of the SMK Rujukan teacher can be fostered through ranks and additional assignments as the principal or school supervisor. Career formation for teacher ranks is done through collecting credit numbers in the fields of teaching, service and research. Vocational teacher constraints Referrals in promotion are caused by not having and fulfilling credit numbers from elements of research and scientific publications. The development of vocational teacher competencies in the field of scientific research and publications is a problem that needs to be programmed. Vocational teacher teacher competency development plans through classroom action research training programs, development research training, and scientific article writing training are relevant and appropriate to be scheduled to support career development of the Referral Vocational Teacher ranks.

Career The additional duties of the Vocational Teacher as the principal and school supervisor are fostered in stages starting from the careers of the ranks of young teachers, middle school teachers, and main teachers. Through career formation and the fulfillment of the requirements of having a certificate for prospective school principals and prospective school supervisors, a teacher will be established and master if assigned as a school principal or school supervisor. Teachers as principals or school

supervisors really have mastered eight educational standards for vocational management starting from the management of educational inputs such as the new student selection system, curriculum development and implementation, learning development, teacher assignments, development of educational facilities and infrastructure, education budget planning, development of cooperation networks. Management of learning processes in theory, practice, field practice, and student assessment processes. Management of output such as graduate placement, vocational guidance, job market services.

4.3. Teacher Competency Development Plan SMK Rujukan

The vocational teacher reference competency development plan is divided into two, namely: development of productive teacher competencies and normative-adaptive teacher development. Sixteen productive teacher competency development programs at Referral Vocational Schools are all very strategic. Reference Vocational Teachers both productive teachers and normative-adaptive teachers must master the curriculum implemented in schools. All teachers must understand the underlying philosophy, structure and content / content of the curriculum used. Mastery of the teacher on the underlying philosophy, structure and content / curriculum content will help the teacher in making learning plans with all the learning tools needed. Likewise with the learning assessment system and tools. Vocational teachers referencing both productive teachers and normative-adaptive teachers should understand the Competency Standards of Vocational Graduates, Content Standards, Standards for Learning Processes, Standards for Evaluation, Standards for Education and Education Personnel, Standard Facilities, Management Standards, Standard Operating Costs in Vocational Secondary Education. Development of curriculum, learning, assessment of learning outcomes, educators and education staff, facilities, management, and financing of education in Vocational Schools refers to Permendikbud 34 of 2018.

Standar Kompetensi Lulusan SMK, Kompetensi Inti Kurikulum SMK, dan Prinsip-prinsip pembelajaran kejuruan sudah semestinya dijadikan rujukan dasar pengembangan dan pelaksanaan pembelajaran di SMK. Semua guru baik guru produktif maupun guru normatif-adaptif sudah mulai mengorientasikan, menghubungkan, dan mengintegrasikan kompetensi dasar yang diajarkan dengan SKL dan KI SMK. Hal ini dilakukan untuk mengukur tingkat keterkaitan pembelajaran kejuruan di SMK dengan dunia kerja dan kebutuhan tugas-tugas kerja. Pendidikan karakter dan nilai-nilai budaya Jawa dintegrasikan dalam proses pembelajaran yang terencana dalam RPP. Pembelajaran kejuruan berbasis kompetensi dilaksanakan secara benar dan utuh. Penilaian pembelajaran dilakukan secara otentik dan kontekstual.

Effective and interesting learning requires appropriate learning media, massive IT utilization, and blended e-learning. Training on learning media development, IT training, and e-learning training is very relevant for all vocational school teachers. Increasing the competency of teachers related to the field of study that is taught requires appropriate subject matter training and up to date. Field training can improve the quality of the content of learning materials. Industrial practice programs and internships are also very important for vocational teachers because only teachers who are experienced in successfully carrying out a job assignment can teach work skills to their students. Further study S2 and S3 is the program with the last priority. This program is important for improving teacher competency in scientific matters, developing research capabilities, and conducting scientific publications.

5. Conclusion

Competency development of SMK Rujukan teachers is planned through twelve training programs, two internship programs, and two PLPG / PPG education programs and further studies. All programs are in accordance with the needs of developing the Reference Vocational Teacher competency. All programs support teacher competence in planning the implementation of learning, assessment of learning, development of learning media, learning materials. Obstacles to vocational teacher referral career development are caused by the low competence of teachers in researching and making scientific papers. This obstacle can be overcome through training programs and research workshops and scientific writing as well as intensifying the MGMP function as a learning teacher community.

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