

Model of Learning Implementation in Preparing Vocational Teachers

Dewi Cakrawati ^{a,1}, Sri Handayani^a, Mustika Nuramalia Handayani^a

^aDepartement of Agoindustrial Education Technology
Indonesia University of Education, Bandung, INDONESIA

¹dewicakrawati@upi.edu

Abstract - Establishing Vocational High School on Agro industry is the government policy to support agriculture development, by producing qualified employees in agro industry. But it was limited by the lack of vocational teachers that hold social, pedagogy and knowledge competencies. Department of Agro Industry Education Technology has a very strategic role in fulfilling the need of qualified vocational teachers on agro industry. The curriculum is not rigid that it develops according to users' need. Several Focus Group Discussions were held to determine classes that suitable with the needs of vocational school and industry as departement's users. Focus group discussions were involving stakeholders as school headmasters and industrial parties. With the curriculum designed by ratio 60% agriculture processing science and 40% pedagogic science, Department of Agro Industry Education Technology is expected to deliver qualified vocational teachers candidate in agriculture processing technology that possess positive character, develop cognitive competency and improve psychomotor ability.

Index Terms - agroindustry vocational teacher, curriculum

1. Introduction

Vocational education has an important role in Indonesia's education system since it provides education for those who cannot afford university so they can be ready to work after graduated from high school. Reference [1] stated vocational education believed as one of the solution to reduce unemployment, also social effect because of it. One of the Indonesia's government policy was increasing the number of vocational high school so the ratio between general high school and vocational high school will be 40% and 60% in 2020. Indonesia's vocational education consist of secondary and high vocational education [2]. Vocational school (SMK) are organized by the spektrum of expertise vocational education namely (1) Engineering and Technology, (2) Information and Communication Technology, (3) Health, (4) Arts, crafts, and tourism, (5) Agribusiness Agro, and (6) Business and Management which altogether hold 121 competency skills. We are all aware that Indonesia is an agricultural country that has abundant of natural resource so development vocational high school on agriculture was also government priority. Agriculture vocational high school is expected to produce qualified graduates that will fulfill demand on skilled workers on agriculture field.

Vocational education can be classified as teaching procedural knowledge, as according to Prosser's Sixteen Theorems on Vocational Education, there are certain minimum standard to operate successful vocational education, including certain competencies that teachers must possess. Reference [3] stated that student skills and

competencies in vocational agriculture should be directly derived from their teacher. Teacher could reduce theory in the class and replace it with teaching at laboratory or workshop. Consequently, there are additional competencies that vocational teachers should possess in order to organize an effective learning program. Research showed that agricultural teachers should possess seven competencies, there were program planning, leadership skills, guidance and counseling, teaching techniques, supervised agricultural experience, adult education and school and community relations [4]. Teachers should have 4 competencies which are pedagogy, social, personal competency and professional competency [5]. Pedagogic competencies includes understanding learners' characteristics and behaviour, planning and implementing learning process, developing learners' ability to communicate, using the information and communication technology (ICT), evaluating learning outcomes, and reflecting evaluation result. Personal competencies include personal performance and work ethic. Social competencies include: communication, attitude, and adaptation. Professional competencies cover: knowledge on subject materials, understanding and developing teaching materials including competency standards of subject material. These competencies however are suitable for general teachers, while vocational teachers should also possess psychomotor competency as they had to demonstrate some skills to their students. Research showed that teachers quality may be related to improement in student performance [6]. Research also showed teachers education, licensing dan profesional development can make an important difference in teachers' capacity in their work.

The number of vocational schools in Indonesia are currently 11.707, with students are 3.780.825 and teachers are 141.988. government still had plan to build 200 more vocational school [2]. It will made vocational teacher shortage will be worse. Some news report that government policy in increasing the number of agricultural vocational high school was not supported by availability of vocational teachers. Many of them were not possess pedagogy competency since they were not from education background [7]. Reference [8] stated pedagogy competency is important for teachers that it can be said if teachers are meeting students need, they are effective educator. Government believes that another teacher's task is to develop students' behavior as a part of developing nation character. Teachers not only influencing the quality of learning but also have direct impact on other functions like social integration and innovation process. Qualified vocational teacher are urgently

required in order to respond the need of the economic and educational reform goals.

The Indonesia government has set some requirements that to become a teacher, someone need to own bachelor degree and attaining a teaching certificate. Since 2008, ministry of Education has pointed Indonesia University of Education to accommodate the need of agriculture vocational teachers. There are certain standard that teachers should have, so organizing education for teachers should notice learning outcomes expected from teachers. It is highly supported by educational institution on designing curriculum, managing learning process, evaluation learning process also benchmarking and customizing teacher's learning outcomes with vocational school competency as end users. This research's purpose is to design learning management in Department of Agro Industry Education Technology to produce teachers that meet government standards and users need.

2. Methods

The purpose of this study was accomplished using multiple focus group discussions (FGDs) :

1. The first focus group discussion was held by inviting two headmaster of agricultural vocational high school. This FGD's purpose was to collect information about vocational high school curriculum and its learning management.
2. The second FGD was conducted to design curricula and learning management model and it is involving all staff of agro industrial education of technology department.
3. The third FGD was conducted in order collect information needed from agricultural industry. As we know that those who graduated from vocational high school are working in industry so we need to know what competency needed by agricultural industry, so that it can be provided in the curricula.
4. The fourth step was to maintain learning quality by ordering department staff for attending workshop on lesson study and conducting Open Lesson.

3. Result and Discussion

Curriculum is not rigid, it has to be supplemented with socio economic development also scietific and technology to meet users need [9] . Thus curriculum development is a continous process to constanly improve. Developing curriculum should be start by identify social needs and focus on the analysis of relevance in terms of retaion to the world of work. Reference [10] stated agricultural science education program should consist of balanced curriculum that includes general education, technical agriculture content and pedagogy professional skills. Research has been conducted by many experts in order to understanding competencies need for effective agricultural teacher. Reference [11] stated that characteristics of effective agricultural teachers are categorized into area of instruction (effective learning, organize and motivate students), community relations, professional growth, program planning and personnel qualities. Agricultural science teachers are expected to be very much involve with student such as facilitating student projects, planning and operation on agricultural science

program in order to support students learning [12]. Reference [13]stated that teachers in vocational school should be able to integrate curriculum that addresses standars in science nad mathematics and agriculture areas. From above, writers conclude that agriculture teachers should at least possess three competencies, there are pedagogy, cognitive and behavioral. Education institution should consider these three competencies to design curriculum in agriculture education program.

In order to produce curriculum that suitable with users need, Department of Agro Industry Education Technology conducted several Focus Group Discussion. The first Focus group discussion was held by inviting two headmasters of agriculture vocational high school. Education on Department of Agro Industry Education Technology is focusing on agricultural processing technology and it is mutually accord with vocational high school major agribusiness of agricultural processing. Vocational high school grouped subject matters into three categories, there are normative subjects consist of religion, moral education and environment education, adaptive subjects such as mathematics, biology, physics and productive subjects that consist of agricultural science. Learning time ratio in vocational high school is 70% for productive lessons and 30% for normative-adaptive lessons. Productive lessons are applied lessons which students need to improve their psychomotor skills. Most of productive lessons supported by working in laboratory and also produce some product, like bread, yoghurt or chips. Since vocational high school students need to pass competency exams, they need to work seriously in laboratory because the exam is testing on their psychomotor ability on producing agricultural product. It need tremendous support from their productive teachers. So, Department of Agro Industry Education Technology also provides its students with various subjects that will enrich their knowledge and ability on agricultural processing matters. The subjects are various from basic science such as biology, mathematics, physics and chemistry to applied subjects matters such as technology processing on horticulture, fats and oil, cereal, tuber root and legumes, meat and fish. There are also intermediate subjects such as food chemistry, food biochemistry, unit operations, research operations, quality control. Most of the subjects are supported with students project and working in laboratory to improve students skills. Student also has to run independence science project as a final task to complete their study in agricultural processing science. Reference [14] stated that the use of agricultural curriculum need to be supported with biological, chemical dan physical sciences to offer a rigorous and meaningful context of learning. Experiential learning is common in vocational high school and agriculture education program in university [15] . Experiential learning begins with student engaging the studied phenomenon, followed by reflect on what they experienced, continues with developing theory, solution or explanations. Evaluation indirectly showed by subsequent experimentation, refection and generalization.

Reference stated agriculture vocational teacher should have pedagogy competencies, include teaching skills and management, motivate and persuade students also help students improve their skills. Department of Agro Industry Education Technology accommodate pedagogy

competencies by providing subjects such as education philosophy, curriculum and learning, research methods on education, learning evaluation, education psychology, guidance and counseling. It is also organizing Early Experience program at vocational high school for a semester. In this program, students learn how to plan learning, execute and evaluate it. Participating in an early experience opportunity aides students in their decision to pursue a career in agricultural education. As part of this early experience, the interaction between pre-service teachers and secondary agriculture students has been found to be the most influential factor, both positively and negatively [3]. Students often express different attitudes at the conclusion of their student teaching internship than they do before the experience. Teachers should have behavioral competencies as they are role model to their students [5]. The behavioral competencies were accommodate by providing religion, moral and Pancasila, education on social and culture subjects. Another subject that can help improve students soft skills is community service, that conducted at holiday where students live in the village among rural citizens. Students learn to communicate with people from various background and work with society to solve problems occur in the village.

The third FGD was conducted by inviting representatives from agricultural industry. This FGD's purpose is to find out what competencies that industry want from department's graduated. Writers find that industries need those who are ready to work and have positive attitude such as hard worker, able to work in a team, diligent. In order to accomodate industry needs, Department of Agro Industry Education Technology is organizing apprenticeship in food processing industry. The program gives students opportunity to learn about work place and its environment, also about technology used by industry also to improve students soft and hard skills. Apprenticeship also needs to shape their attitude and cognitive competencies. Attitude such as able to work under pressure, able to work together in a group, discipline, diligent, hard worker. Cognitive such as student able to solve problem that might occur in industry based on knowledge they get as learn in university.

Since department is teaching a future agriculture vocational teacher, writers realize that teaching continuous improvement is a must. So department's member takes an active participation in teaching improvement program such as Lesson Study. This program's purpose is to build learning community among lectures, so they can discuss about teaching materials, teaching methods and media even problem occurs among students. They can also conduct an open lesson where they can ask their colleagues to observe the way they teach by observing students.

With the curriculum designed by ratio 60% agriculture processing science and 40% pedagogic science, department of education on agro industrial technology is expected to deliver qualified teachers candidate in agriculture processing technology that possess positive character, develop cognitive competency and improve psychomotor ability.

4. Conclusion

Many legal preconditions support for the development of agricultural vocational education program, include law, regulations and manual. Vocational agricultural teachers

should have at least four competencies, which are cognitive, behavior, pedagogic and psychomotor. To deliver qualified vocational teacher is a long term sustainability of agricultural education program. It has to be supported by develop curriculum that is designed by considering all aspects including users. University can have a work within other institution such as polytechnics, colleges and open university. Professional association such as Aptekindo may play a role in developing professional education for agricultural vocational teacher. The curriculum itself has to accommodate subjects that will help students develop their hard skill and soft skills, improve their knowledge and skill, since it is not rigid, it has to be develop according to social economic need in order to fulfill industry requirement. It has to be supported by dedicated department's staff that continous improve their teaching ability.

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