

Production Based Training on Agro Industry Expertise Course to Improve Student's Competencies in Food Diversification based on Local Resources

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ABSTRACT

The research approach was developmental research for improving, implementing and evaluating a production based learning (PBL) on subject of Technology Processing of Animal Product at Study Program of Education on Agroindustry Technology, Universitas Pendidikan Indonesia. Syntax of Production based learning are (1) Explanation of the objectives and competencies to be achieved; (2) Explanation of course material; (3) the making of group where each member of the group is divided according to the division in the company; (4) Preparation of company profile by each group; (5) SOP for each part by each group; (6) Practical manufacture of processed products by each group - syntax 1 to 6 can be repeated according to the number of products produced by each group, each group member should play different role in every different, so that every group member possessed the skill in every work part of producing a product; (7) Naming the product and work report by each student. The result showed that there was improvement in students' knowledge seen from student's test score. The result also showed that there was improvement in student's skill seen by performance assessment.

1. Introduction

Vocational education has an important role to provide qualified workforce. Since the Study Program of Education on Agroindustry Technology, aims to fulfill the need of qualified vocational teachers on agro industry, its curricula has been developed by ratio of 60% agriculture processing science and 40% pedagogic science (Cakrawati et al, 2015). Alumna from this program are expected to have several competencies including psychomotor as they had to train students' skill in processing food. According to (Baker and Trussell, 1981), students' psychomotor skill derived from their teacher.

Secondary vocational teacher acquired the competencies through college courses, apprenticeship and individual study. It can be said that learning activities in university is important to produce excellent teachers. According to (Mclean and Camp, 2000) curricula in university program of agriculture or preservice teacher often conducted in the form of experiential learning. Roberts, (2006) stated that learning in the form of experiential can occur in the classroom or laboratory such as experiments or project. university has independency in designing curricula, course planning and teaching activities therefore teachers can properly develop curriculum that fulfill students need. Chung, (2015) proposed problem based learning technique because this learning technique was proven able to increase students motivation to learn proactive, improve student's critial thinking and problem solving knowledge also develop skills and attitude accroding to industries' expectation.

Learning at different places, such as laboratory, classroom and workplace provide possibilities to develop students' knowledge and skill, also build their attitude towards many situations. Therefore Vocational Education Program should improve learning quality by developing learning experience (Onstenk, 2009). The research in this article is action based reseach of students' experience in production based learning consist of occupation spesifik subject, which is Processing technology of animal product. In this course, students are expected o produce food product from animal such as yoghurt and ice cream. The aim of the study was to examine students' experience with formative asesment in workplace learning.

2. Methods

The research conducted using action research on the basis of class action research proposed by Kemmis dan Mc Taggart (2000). The action research focus on improvement on syntaks of Production Based Learning to improved learning process. Kemmis and Mctaggart action research model consist of four components, there are planning, action, observe and reflection. Research flow chart stated in Figure 1.

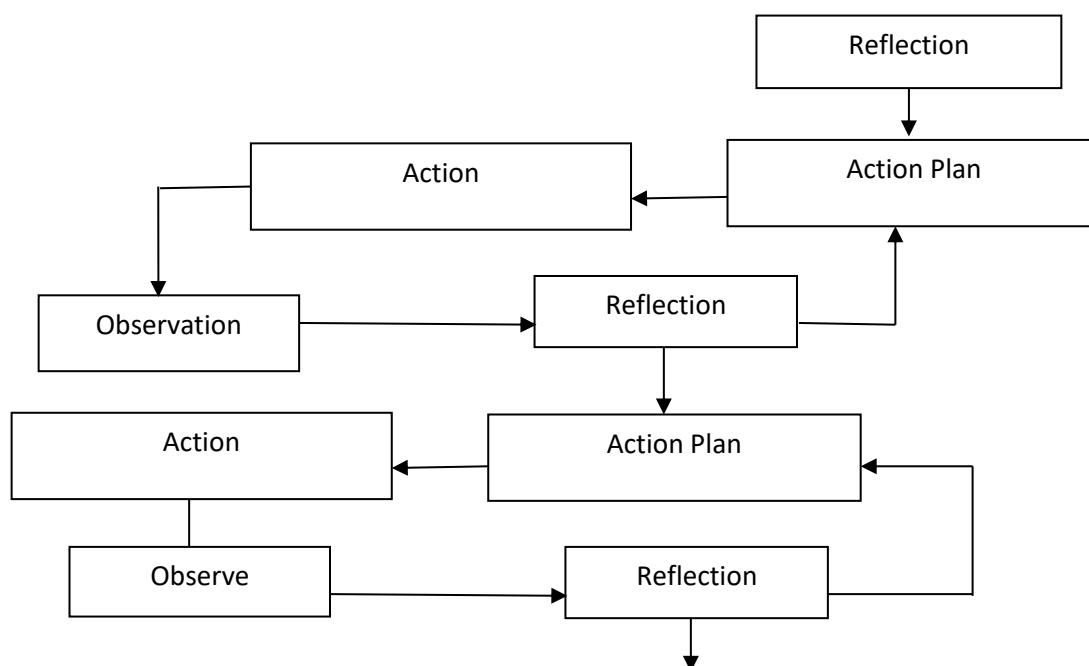


Figure 1. Research Flowchart

2.1 Data Collection

Data collection techniques in this study are:

- a. written post test conducted at the end of cycle 3 and cycle 6 to determine the final results of student learning after learning development model Production Based Training;
- b. Reports about products made. Practical reports are made individually in the form of a paper on processing technology processed products that have been implemented.
- c. The paper not only contain practical implementation process, but starting with a review of the raw materials used up to the observations of the product. In this study, the student must make practical reports four refined products, namely: purple yam ice cream, yogurt with fruit leather dyes dragons.

2.2 Data Analysis

Data obtained from the test result furthermore processed and converted according to Universitas Pendidikan Indonesia's academic guidelines then distributed in table of frequency distribution. Students who have score below 70 need to be remedial before continue to the next cycle. Project reports were scored based on teacher's guideline with ratings range 4 = very good, 3 = good, 2 = adequate, and 1 = less. For students who get less value, then the student must rectify its report.

3. Result and Discussion

Production based learning is slightly different with project based learning, but almost simmilar with work based learning. In production based learning, students are given project to produce fish product that stated by the teacher. This learning also applied student-centered learning that according to ((Harmer, 2014), teacher act as tutor that helps student in their learning process by supporting them, if necessary. It is expected that with less teacher control, students have more responsibility for their learning. There were three steps conducted in the research; preparation, implementation and evaluation. In the preparations steps, researcher did some production trial on making fish ball and craker from fishbone. Production trial was needed to know time needed to make the products and to make sure the laboratory have all the equipment to do production.

Before the implementation step, researchers do some reflection and make improvement on production based learning syntaks, as stated in Picture 2. Improvement was made to make student feel motivated since they are given real problem, as in real manufacturer, each member has spesific task and responsible with their task shown by organisational diagram and also jobdesk that each group make. Students were making standard operational procedure (SOP) on each production step, so that production process was controlled. according to (Harmer, 2014), giving the student, the opportunity to explore learning process is important matters in production based learning. Production based learning not only improve student's hardskill but also soft skill especially the ability to work in group. Since according to (Hanney & Savin-Baden, 2013), in production based learning, students are exposed to a complex series of interaction between group member and they develop their communication, planning and team working skill.

Implementation of production based learning was conducted with Class action research, consist of 3 learning cycles. First cycle was explanation on production based learning where students was given task to create SOP, company profile and jobdesk on each member. Second cycle was explanation of subject which is the principal of making fishballs and fishbone craker, it was conducted in laboratory. Third cycle was producing fishballs and fishbone crackers in laboratory. Students were working suited with their jobdesk. Learning process was begin when students buy raw material for their product since they were expected to have knowledge on selecting good raw material with limited budget. They also learn to calculate the amount of raw material to buy in accordance with the product to produce. After third cycles are finished, researched continue with reflection and evaluation. The refection resulted that students and teacher need to adapt with the new learning process. So teacher need to provide more time for students consult after class, for example in making SOP and process flow of making fish product.

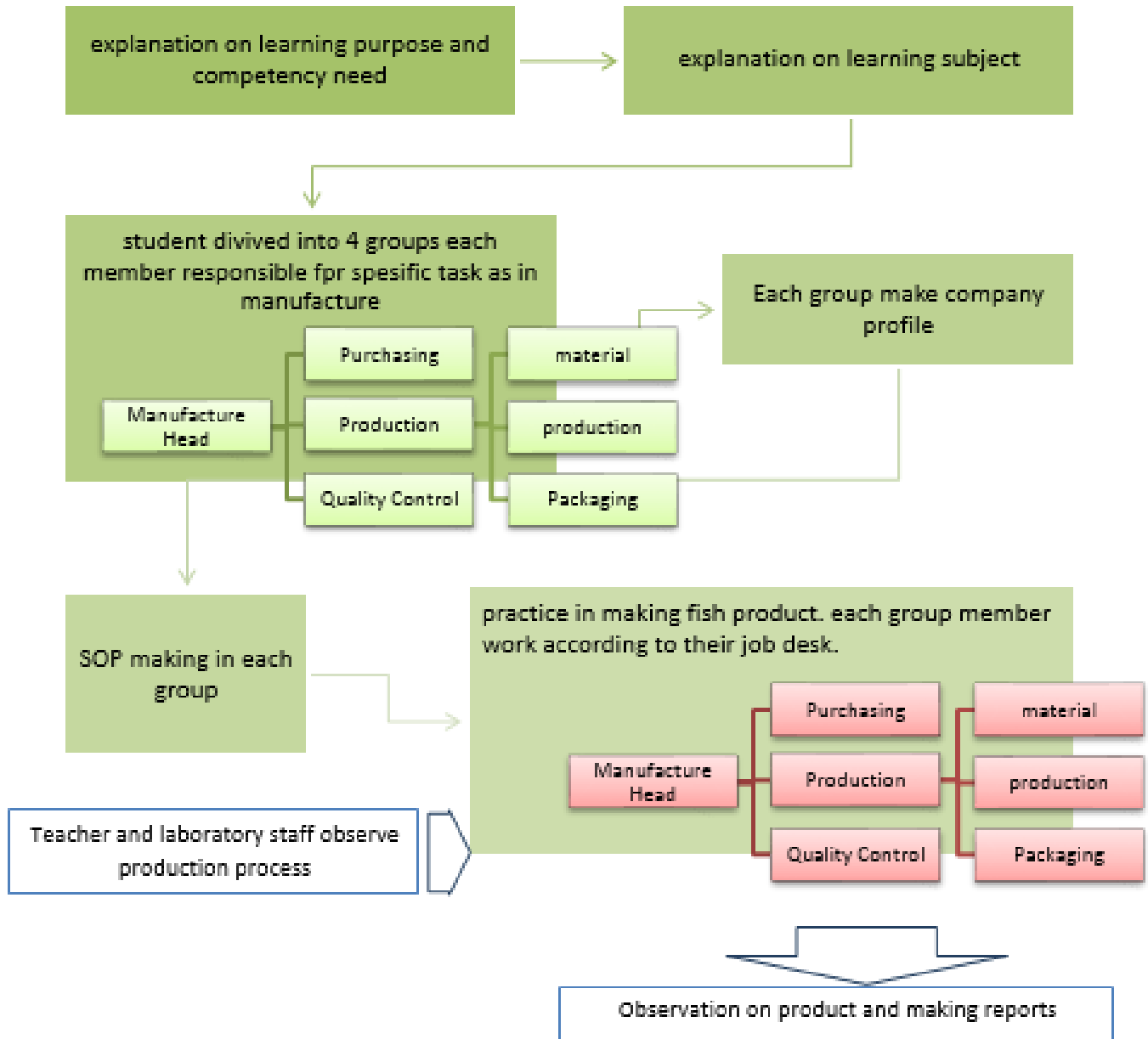


Figure 2. Syntaxes of Production Based Learning

Students assessment was conducted using written post test and reports. The result show that there were increasing in students score. the main advantage of production based learning are improving academic result, the development of soft skills and hard skills, increased student motivation and enjoyment, enhanced outreach and engagement beyond academia and advantages for lecturers (Harmer, 2014).

4. Conclusions

1. Development on learning syntaxes are the addition of students tasks of making jobdesk, SOP and organizational charts. Syntaxes development was purposed to give student experience of working in “real worksite”.
2. Implementation of Production based learning help improve student academic achievement, softskills and hardskill, shown by inceasing in student’s test score, students ability to work in group, ability to solve problems.

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References

- Baker, R. A., & Trussell, S. T. (1981). Administrative model for the incorporation of performance-based instructional modules into university education professional development program. (Research Series No. 5). Auburn, AL: Auburn University, Center for Vocational and Adult Education
- Cakrawati D. S. Handayani, MN Handayani. 2015. Model of Learning Implementation in Preparing Vocational Teachers. *Advances in Social Science, Education and Humanities Research* doi:10.2991/ictvet-14.2015.12
- Chung, P. (2015). Influence of problem-based learning strategy on enhancing student ' s industrial oriented competences learned : an action research on learning weblog analysis. *International Journal of Technology and Design Education*. <http://doi.org/10.1007/s10798-015-9306-3>
- Findlay, HJ. Where do Secondary Vocational Agriculture Teacher Acquire professional Agricultural education competencies? *Journal of agricultural competencies*. Volume 33, 1992.pp 28-33. Available at <http://www.pubs.aged.tamu.edu/jae/.../33-02-28.pdf>
- Hanney, R., & Savin-Baden, M. (2013). The problem of projects: understanding the theoretical underpinnings of project-led PBL. *London Review of Education*, 11(1), 7–19. <http://doi.org/10.1080/14748460.2012.761816>
- Harmer, N. (2014). Project-based learning : Literature review. Plymouth University.
- Kemmis, S., & McTaggart, R. (2000). Participatory action research. In N. Denzin & Y. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed., pp.567–605). Thousand Oaks, CA: Sage.
- McLean, R. C., & Camp, W. G. (2000). An examination of selected agricultural teacher education programs in the United States. *Journal of Agricultural Education*, 41(2), 25-35
- Onstenk, J. (2009). Connections of School- and Work-Based Learning in the Netherlands in *Towards Integration of Work and Learning*. M.-L. Stenstrom, P. Tynj" a(eds.), Springer Science+Business Media B.V
- Roberts, T. G. (2006). A PHILOSOPHICAL EXAMINATION OF EXPERIENTIAL LEARNING THEORY FOR AGRICULTURAL EDUCATORS, 47(1), 17–29. <http://doi.org/10.5032/jae.2006.01017>
- Tilak, J B G. 2002. Vocational Education And Training In Asia in *The Handbook on Educational Research in the Asia Pacific Region*. John P Keeves and Rye Watanabe (eds), Kluwer Academic Publishers. (4 April 2014).