Pactical with Virtual Digital Trainer Learning Approach in Vocational High School Manado, North Sulawesi, Indonesia

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Keywords: Practical, Virtual Simulation, Trainers, Digital

Abstract: This study aims to reveal/test that the results to learn basic digital techniques with the learning approach of virtual simulation (simulator) is higher than the study of students with learning approach to digital trainer. This other research using experimental methods, because it is to determine the effect of learning approaches virtual simulation and digital trainer and compare the two approaches learning. Another variable that can be controlled is the beginning of knowledge in vocational Manado. The results of teaching and learning digital techniques using simulators is higher than the group of learners who use the trainer. The learning digital techniques competency field of audio engineering video and Computer engineering and Networks is more effective in the process of achieving competence when compared to using a trainer.

1 INTRODUCTION

Vocational education program allotment to its graduate have the ability, skill in the field of certain expertise. So minimum demand every of its graduates must skillful in the field of its expertise for corporate world and industry. Vocational training graduate is expected to fill the opportunity to work at corporate world/industry, based on certification area of expertise that is owned the participant to educate. Graduate SMK can continue to the higher education, as long the graduate fulfill the requirements, that is expected based on competence of expertise that is elaborated it.

Issues that in facing the present day graduate SMK, that is gap of demand of expertise in the school of demand that is expected in the industrial world. One of the cause is not yet concordance of supply of demand among others less or have not its you device of practice in the school. Based on the fact that there are in the manufacturing industry, that the process of making one unit of the product requires the collaboration of various skills (collaborative skills). Without the cooperation is good then the final result of the expected product can not be achieved. (Dwi Rahdiyanta, 2014). Trainer DCS/SCADA have developed could be used in accordance with the competence of knowledge and skills on the syllabus subjects Control Systems Process interactively, effective, and efficient, which has been evidenced by the survey data through a questionnaire given to the expert of teachers, experts from industry, as well as the students. (Agus Rahmat Ramdan *et all.* 2016). To carry out a lab activities will require several factors, including laboratory space in accordance with the practice subjects, facilities equipment, and a complete practice materials. Fact the field after the observation is found that there are many vocational equipment and materials that have very minimal practice, teaching media is still using conventional methods , there are even schools that do not have laboratory space, so that the lab is not running optimally. (Sapto Haryoko and Hendra Jaya, 2014).

In fact still a lot SMK that very minimum equipment practices to including SMK Manado. To that end, need effort of substitution of equipment practices with simulator in attainment of competence that same and also improvement of quality of equipment and curriculum. With limitation of equipment practices supporter of attainment of purpose of learning, then it need to be searched for alternative of substitution of equipment of practice area of technical expertise electronics / technique in computer and network with media of electronic that is recognized with virtual simulation (simulator) it to

Sojow, L. and Opit, H.
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DOI: 10.5220/0009013804870489
In *Proceedings of the 7th Engineering International Conference on Education, Concept and Application on Green Technology (EIC 2018)*, pages 487-489
ISBN: 978-989-758-411-4
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be fulfilled proportion of practice that ougt to experienced by the participant to educate. Burdened the equipment of practice in learning will affect in quality of competence that later will be owned the participant to educate. Vocational training is education for acquisition of knowledge and skill that having the economic value, according to need of market with education of labor of coefficient high. Realistic unitary costs of providing technical and vocational education and training, the evidence suggests technical education is a cost-effective modality. (Almeida, 2015). Implication for vocational training is: a) apprentice or internship Program must become part of system of education of vocational, because there are many technical skills, stand, habitual, and emotional can only be gained through the on of the of job of training. b) In on of the of job of training of is studied skill to included that having the character of general and specific, c) Because general of training have the value of longer economic and to be foundation, then it need the strong, d) Spesific training must always be in up of to of date according to need of market, e) Training to have skill of way gain and dig the information to become be important to up of dating including the lesson base of digital technique.

Acquisition of knowledge and performance of a skill or stand that is developed from vocational lesson, is as a rule shown with value of the given number teacher, all scope of cognitive domain and the psychomotors that are study result of participant educate. Present that study result is ability that is owned the student after the s(he receive experience to learn it. Technical, vocational, education and training (TVET) plays a vital role in a society's economic growth and social development. (Azizi N., *et all*, 2015). So acquisition of knowledge and skill of participant educate can be happened when experiencing the experience to study in school is all received theoretically and the practices.

2 METHODOLOGY RESEARCH

Research is done at the SMKN 2 Manado with method of experiment with approach of learning uses instrument for practice of virtual simulator and digital trainer. Settlement of sample randomly counted trainers 30 students for group by means of practice the digital simulator and group that using instrument for practice of digital trainer 30 students. Testing the requirements be to be conducted the test of normality, homogeneity tests significance of regression. Settlement of sample at research is random stage sampling. Each of participant educates the group of is chosen experiment has the whole sample 60 Participants educate.

3 RESULT AND DISCUSSION

Declaring main effect: study result Base of digital technique at group of participant educates that is taught with approach of learning uses the simulator higher than in participant educates that is taught with approach of learning uses the digital trainer. Result of analysis is gained $F_h = 4{,}354$ while $F_t = 4.02$ (Fh= 4.354 > Ft = 4.02), mean Ho be to be refused or hypothesis of research is received. This means there is difference of study result of participant educates learning of digital technique by using the simulator and trainer. Descriptive analysis got that score of average of study result of base of digital technique at group of participant educates that is taught with approach of learning uses instrument for practice of simulator are 77.66 while score of average of study result at group of participant educate that is taught with approach of learning uses instrument for practice of trainer are 72.53. This indicate that the study result of base of digital technique with approach of learning uses the simulator higher than at group of participant educates that is taught with approach of learning uses the trainer.

Learning of Vocational area including productive subject of base of digital technique with approach of learning uses instrument for practice of simulator by teacher can increase the study result because of response of participant educates in internal motivation, response to try to understand the matter of base of digital technique so when participant educates the practitioner to conceptualize the logic from transfer of knowledge that is experienced on assembling of digital network in phases can be assembled quickly if compared to using instrument for traditional practice (trainer). This in line with that is declared by Taghavi and Colen (2009) that integration of learning of laboratory of computer of simulation with method of traditional learning (trainer) significantly increases understanding of student about concept of network of digital electronic. Strategy learning of vocational area aimed at the formation of skill matching with need of employment. Teacher strives to manage the class with selection of approach of learning uses instrument for practice both simulator or trainer to fulfill demand learns it, so participant educates is able to give the feedback in resolving the assembly of network matching with task to be resolved.

As also with that is declared by Kim, Park, Lee, Yuk and Lee (2016) in result of research about

virtual simulation, that (1) Student of Leaner-Centered VR's group reach the study result that more satisfies, they feel understand the better subject, and feels approach of learning with method teaches this is more captivate, (2) Virtual Reality Physics Simulation (VRPS) very useful to use as component of teaching the interaction high, especially in the visualisation conceptualizes the abstraction like phenomenon of electromagnet, (3) Program of VRPS good for: realistic of experiment of hand-on, visualisation from amount of physics that could not see, replace the dangerous place, overcome the cost high, and complicated experiment. This work aims to develop a step by step process on the implementation of the student cantered pedagogy and a digital approach for applying the principles of good assessment and instant feedback to assessment obtained to students. The work seeks to utilize the potential of digital technologies to facilitate peer and self-assessment, promoting greater self-regulation among students. (Evelyn Brindha, 2016).

Competence forming process is supported with cognitive theory in process of change of behaviour of participant educates to the concept of network of is studied logic. Feature of digital symbol and component that is presented in program of software of simulator easier to be understood to be able to relate in process of verification of truth table from network of the logic. This mean process of learning with approach of learning use the simulator in transferring concept of knowledge and formation of skill of participant educates when demonstrated by teacher is quicker understood compared to that is taught with approach of learning uses the trainer.

4 CONCLUSIONS

Based on result of examination of hypothesis, then conclusion as the followings. Study result digital base of technique of group of participant educates that is taught with approach of learning uses the simulator digital higher than the group of participant educates that is taught with approach of learning uses the trainer digital.

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