R. Bagus Wicaksono

Optimization Of The Use Of Laboratory And Simulators In Practical Learning Of Marine Engineering Study Program In Malahayati Merchant Marine Polytechnic

*Corresponding Author: Politeknik Pelayaran Malahayati; E-mail: baguswicaksono1909@gmail.com

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Abstract: According to the KBBI, a laboratory is a certain place or room and so on which is equipped with equipment for conducting experiments. The laboratory has various equipment that is able to support conducting experiments. The laboratory serves to improve the skills and expertise of researchers in using the equipment available in the laboratory. In addition, the laboratory also functions as a learning tool for students to be able to understand and understand all abstract knowledge so that it is concrete and real. While the simulator is a tool to perform simulations. Malahayati Merchant Marine Polytechnic is one of the vocational colleges that has laboratory infrastructure and simulators for nautical studies, marine engineering and ship electrical systems. This study aims to see the extent to which the optimization of the use of practical learning media in laboratories and simulators in supporting vocational education at the Malahayati Merchant Marine Polytechnic.

Keywords: Optimization, Laboratory, Simulator, Marine Engineering, Practice, Malahayati Merchant Marine Polytechnic.

Introduction

Laboratories and simulators are practical learning facilities in educational institutions. In vocational colleges, practical learning facilities are preferred because vocational programs are educational programs at the higher education level that have the aim of preparing personnel who can establish expertise and skills in their fields and are ready to compete globally. Broadly speaking, vocational education has the aim of preparing students to become people who have the ability of professional experts in implementing, developing and disseminating technology and or arts and seeking their use to improve people's lives and enrich national culture.

Research Methods

This study uses a descriptive quantitative approach where the informants in this study are the cadets of the Diploma III program of the Marine engineering Study Program at the Malahayati Merchant Marine Polytechnic, the teaching staff are lecturers who are in charge of the Diploma III program of the Marine engineering Study Program and educational staff in this case the head of the unit and laboratory manager and simulators. Data collection methods that will be used in the study are questionnaires, observation, interviews and documentation.

Results and Discussion

The results showed that the optimization of the use of laboratories and simulators in the marine engineering study program at the Malahayati Shipping Polytechnic was very good. This can be seen from the results of the questionnaires filled out by the lecturers and cadets which showed that the practical activities in the laboratory and simulators in the marine engineering study program at the Malahayati Merchant Marine Polytechnic were in accordance with the lesson plans, the lecturers also explained the objectives of practical learning in the laboratory and simulators. With practical learning in the laboratory and simulators, it can help achieve basic material competencies in the marine engineering study program and lecturers in the

marine engineering study program have directed cadets to apply theory into practice in laboratories and simulators. The lecturers in the marine engineering study program also always supervise practicum activities and carry out evaluations in every practical activity carried out. The lecturers also saw the existence of an objective, enthusiastic, thorough attitude and the growth of an active and critical attitude from the cadets who did practical learning in the laboratory and simulator. The laboratories and simulators in the marine engineering study program already have adequate equipment for practical learning activities, this is also in accordance with the results of observations made during the research. From the results of observations and questionnaires to lecturers and cadets, it was also stated that the equipment and practice materials available in the laboratory and simulator were in accordance with practical needs. The cadets who carry out practical learning can use the equipment according to the correct procedure. In practical learning activities in laboratories and simulators, practice groups are created. The cadets in the marine engineering study program have also been able to explain the meaning of planning and implementation to the results of the practices that have been carried out. With practical learning, the cadets feel they understand the material being studied better. In addition, cadets get the opportunity to ask questions with the lecturer if there are things that are not understood during practical learning.

Conclusion

However, so that the use of laboratories and simulators in the marine engineering study program can be even more optimal, every lecturer who conducts practical learning requires the cadets to make a systematic practice report, and if there is a failure in carrying out practical learning, the cadets must be given the opportunity to re-practice. In addition, cadets should be given motivation so that they can plan a practice activity independently. In addition, practice materials for practical needs must always be available in the laboratory and simulator and damaged equipment can be repaired and maintained immediately. Every cadet, lecturers and also laboratory units must have a practical learning module as a reference in practical activities in laboratories and simulators.

References

Bartuseviene, Inga. (2020). Maritime education and training as a tool to ensure safety at sea in the process of introduction of maritime autonomous surface ships in shipping. Proceedings of the 24th international scientific conference at Kaunas, Lithuania. Available at : https://www.researchgate.net/publication/349120238_Maritime_Education_and_Training_as_a_Tool_to_Ensure_Safety_at_Sea_in_the_Process_of_Introduction_of_Maritime_Autonomous_Surface_Ships_in_Shipping

Chybowski, L. et al. (2015). Engine room simulator as an educational tool for marine engineers relating to explosion and fire prevention of marine diesel engines. Scientific Journals of the Maritime University of Szczecin, 43 (115), 15-21. doi : 10.17402/034

Ginting, D. (2020). Pengaruh bridge dan engine room simulator terhadap tingkat keterampilan taruna akademi maritime Indonesia Medan. Journal of Maritime and Education (JME), 1 (2). Available at : https://www.poltek-amimedan.ac.id/ejournal/index.php/jme/article/view/12

Maung, CT. (2019). Simulation training and assessment in maritime education and training. World Maritime University Dissertations. Available at: https://commons.wmu.se/cgi/viewcontent.cgi?article=2139&context=all_dissertations

Jamil, MG. Bhuiyan, Z. (2009). Deep learning elements in maritime simulation programmes : a pedagogical exploration of learner experiences. Int J Educ Technol High Educ 18, 18 (2021). doi : https://doi.org/10.1186/s41239-021-00255-0

Jayadi, U. ., Riinawati, R., & Sahreen, K. . (2022). Improving Mathematics Learning Outcomes Through the Use of Animated Video Media in Learning to Build Flat Grouping for Mentally Impaired Students. International Journal of Education and Digital Learning (IJEDL), 1(1), 1–4. Retrieved from https://ij.lafadzpublishing.com/index.php/IJEDL/article/view/2