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Study of the Needs of Teaching Materials for Aircraft Maintenance Procedures Course at Makassar Aviation Polytechnic

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Abstract: This study aims to assess the needs of teaching materials in the Aircraft Maintenance Procedures course for Diploma 3 Airport Technology students. This research is a descriptive qualitative research. The data collection technique was carried out by distributing questionnaires. The questionnaire results stated that 79% of students knew about the concept of Aircraft Maintenance Procedures and none of the students knew about advanced aircraft maintenance. 59% of students stated that the learning process was dominated by using powerpoint compared to other teaching materials and 100% of students agreed if a learning supplement book was developed. Therefore, it can be concluded that it is necessary to develop teaching materials in the form of supplement books for the Aircraft Maintenance Procedure course.

Keywords: Aircraft maintenance procedures, Needs assessment, teaching materials

1. Introduction

The use of teaching materials in an educational context is a strategic approach that involves the use of various learning materials to improve the effectiveness of the educational process[1]. Teaching materials can include a variety of media, such as textbooks, interactive modules, multimedia presentations, and other learning resources[2]. The main purpose of utilizing teaching materials is to facilitate the understanding of concepts, increase learners' active participation, and support the development of relevant skills. Teaching materials are designed with specific learning objectives and learners' needs in mind.[3] Flexibility in presenting information through various media allows for customization to individual learning styles, while interactive and participatory approaches stimulate learner engagement in the learning process[4]. The use of technology, such as online learning platforms, can extend the accessibility of teaching materials, presenting the potential for distance learning and technology skills development[5].

The Aircraft Maintenance Procedures course at the polytechnic education level is a course that provides a theoretical and practical foundation in developing an in-depth understanding of aircraft maintenance procedures. The main focus of this course is to provide comprehensive knowledge of the essential steps in maintaining and caring for aircraft efficiently and safely[6]. Learning materials cover the technical aspects of maintenance, including routine checks, repairs and preventive maintenance[7]. Students are provided with an understanding of critical aircraft systems, aviation safety regulations, and the latest technology used in aircraft maintenance[8]. Practical skills learning approaches, such as maintenance of engines, avionics equipment and aircraft structural systems, are at the core of this course. This course is specifically designed to create aircraft maintenance professionals who are able to work independently or as part of a maintenance team[9]. Evaluation is conducted through a combination of theory exams, practicals, and simulated maintenance projects to measure students' understanding and skills. As such, this course makes an important contribution in equipping students with the necessary competencies to become skilled and responsible aircraft maintainers.

Textbooks have an important role as a reference source, complement, and guide for students during the learning process in the classroom. In addition, coursebooks function as teaching materials that present more in-depth information to enrich learners' understanding[10]. In the context of teaching, the use of textbooks as the main support for teaching materials must also be adjusted to the level of education concerned. Therefore, the preparation of textbooks should be adjusted to the course outcomes to be achieved.

In this regard, this study aims to evaluate the needs of teaching materials, especially in the Aircraft Maintenance Procedures course, where an understanding of the use of plants by certain tribes in Indonesia, especially in areas that are not yet familiar to students, is considered important to broaden their horizons. The results of this study can serve as a foundation for developing teaching materials in the Aircraft Maintenance Procedures course at Makassar Aviation Polytechnic Indonesia, especially for Diploma level aircraft maintenance technology study program students. As a result, this research is expected to support the improvement and development of curriculum and teaching materials that are more relevant to the needs and

level of understanding of students at Makassar Aviation Polytechnic Indonesia.

2. Research Methods

This research is a descriptive qualitative research conducted in July 2023 at Makassar Aviation Polytechnic, Indonesia. The subjects of this study were students of the 2021 batch of aircraft maintenance technology study program at Makassar Aviation Polytechnic who had taken the Aircraft Maintenance Procedure course. The sample in this study was taken randomly with a total of 21 students. Data collection is done by giving a questionnaire containing questions about learning the Aircraft Maintenance Procedure course.

3. Result and Discussion

The results of the study of teaching material needs in the Aircraft Maintenance Procedure course conducted in July 2023 at Makassar Aviation Polytechnic of Indonesia are as follows.

Student Perspective on Aircraft Maintenance Procedure Course

From the results of the questionnaire filled out by students, it is known that knowledge about the Aircraft Maintenance Procedure course 79% of students answered in accordance with the description, and the remaining 21% of students answered that it was not appropriate. Based on the results of the questionnaire, 100% of students agree that the Aircraft Maintenance Procedure course is important to learn. Data related to student perspectives can be seen in Figure 1.

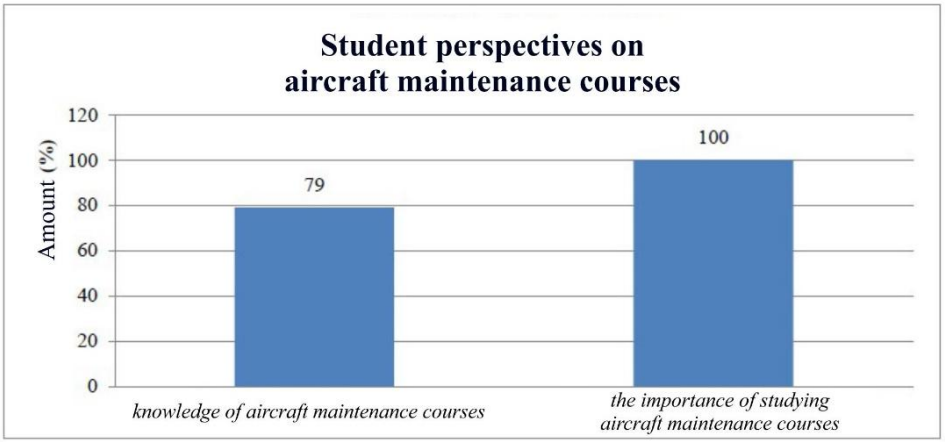

Figure 1 Graph of Student Perspective Analysis Results

Students' Knowledge of Plant Utilization

Based on the results of the questionnaire, 80% of students have utilized the use of technology in conducting aircraft maintenance, 62% of students know the use of tools in checking and repairing aircraft, and none of the students know about ruting maintenance carried out at Sultan Hasanuddin Makassar International Airport. Data related to student knowledge can be seen in Figure 2.

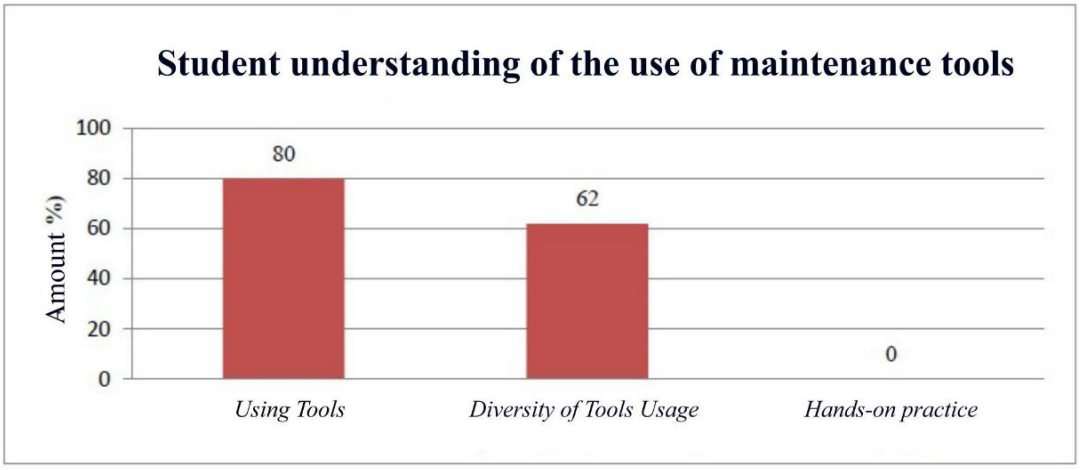

Figure 2 Graph of Student Knowledge Analysis Results

Learning resources and methods used in lectures

The results of the analysis of the questionnaire given to students showed that 52% of students stated that the learning process was dominated by using powerpoint compared to textbooks, modules and handouts. With the use of powerpoint, learning with the discussion-presentation method. This is in accordance with the statement expressed by 52% of students. This is presented in Figure 3.

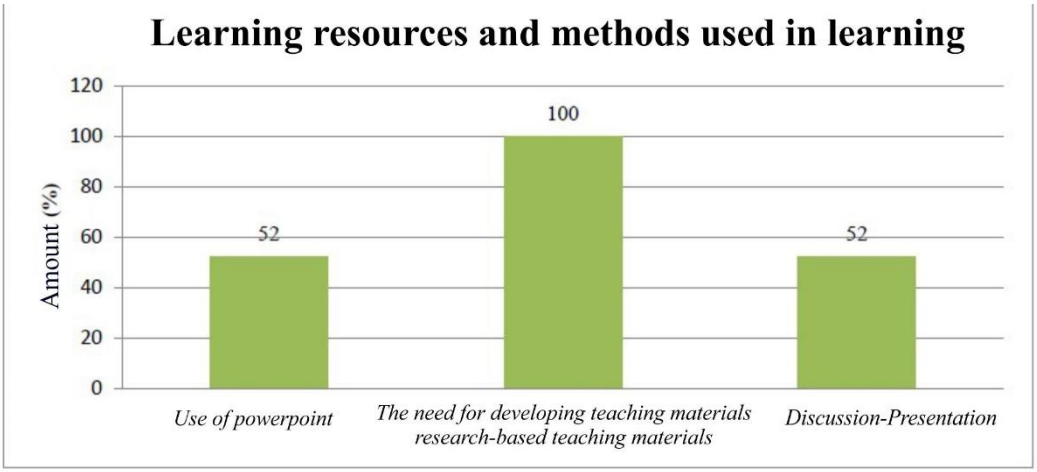

Figure 3 Graph of Analysis Results of Learning Resources and Methods used in Lectures

The study of teaching material needs in the Aircraft Maintenance Procedures course at the Indonesian Aviation Polytechnic was initiated to provide an in-depth understanding of the needs of students in achieving aircraft maintenance competencies in accordance with aviation industry standards. Aircraft maintenance is a critical aspect in ensuring aviation safety and health. The purpose of this study is to identify the needs of specific teaching materials in supporting the learning of the Aircraft Maintenance Procedures course. The focus of the study included an understanding of technical aspects, safety regulations, and practical application in the context of aircraft maintenance. This study uses mixed methods, combining quantitative and qualitative approaches. Surveys can be conducted to collect quantitative data on student preferences for types of teaching materials, while interviews and group discussions can provide qualitative insights into specific needs.

Involving students in the needs identification process is essential. Data collection involves questions related to teaching material preferences, obstacles faced, and their expectations regarding course learning. Based on the results of the analysis, recommendations for the development of teaching materials are made to meet the identified needs. These may include the development of modules, the use of technology in learning, or the integration of industry case studies. The practical implication of this study lies in improving the learning quality of the Aircraft Maintenance Procedures course, optimizing students' learning experience, and preparing them with skills relevant to the demands of the aviation industry. This study needs to be aware of certain limitations, such as sample size and institutional context. Further research could explore the implementation and impact of the proposed teaching material changes in the learning process.

4. Conclusion

This study provides a comprehensive overview of the needs of teaching materials in the Aircraft Maintenance Procedures course at Makassar Aviation Polytechnic. Based on the results of the study, several key conclusions can be drawn:

1. Student Needs Identification: Involving students in the needs identification process proves that they have clear preferences for certain types of teaching materials and learning methods. An in-depth understanding of their needs is a key cornerstone in designing a responsive curriculum.
2. Teaching Material Gaps: Analysis of the existing teaching materials and student responses revealed certain gaps. Adjustments in learning materials are needed to address these gaps, including the addition of modules or the use of technology to support learning.
3. Implications for Curriculum Development: The recommendations generated from this study provide guidance for curriculum development that is more dynamic and relevant to student needs. Improvements in the preparation of teaching materials will support the achievement of course learning objectives more effectively.
4. Improved Learning Experience: By identifying and addressing students' needs, this study has the potential to enhance their learning experience in the Aircraft Maintenance Procedures course. This can

contribute to student motivation and success in understanding and applying aircraft maintenance concepts.

Development of Contextualized Teaching Materials: The teaching materials developed should reflect the context of the aviation industry in Makassar and its surroundings. This involves developing modules that integrate local case studies and relevant regulations in aircraft maintenance.

References

[1] J. I. THAMBIRAJAH, P. KRISH, and A. H. SHAARI, "The Acquisition of Technical Terms using the Online Learning Approach among Aircraft Maintenance Learners.," *3L Southeast Asian J. English Lang. Stud.*, vol. 28, no. 2, 2022.

[2] M. Qu and L. Zhang, "Practical Teaching Platform of Aircraft Maintenance Skills Based on Virtual Reality Technology," in *International Conference on E-Learning, E-Education, and Online Training*, 2022, pp. 415–429.

[3] S. R. Torres Orozco, "Exploring factors of english language program designs for aircraft maintenance technicians (AMTs) in Colombia: a case study," 2022.

[4] Á. Gómez-Cambronero, I. Miralles, A. Tonda, and I. Remolar, "Immersive Virtual-Reality System for Aircraft Maintenance Education: A Case Study," *Appl. Sci.*, vol. 13, no. 8, p. 5043, 2023.

[5] D. Terenzi, "Overcoming challenges in English for aviation maintenance: technical publications selection for the construction of a corpus and its use to teach language aspects considering learners needs," *Open J. Appl. Sci.*, vol. 11, no. 10, pp. 1122–1134, 2021.

[6] I. Mazurenko, "Training of future aircraft maintenance engineers for improving professional communication," *Sci. J. Pol. Univ.*, vol. 46, no. 3, pp. 64–72, 2021.

[7] T. D. Rupasinghe, M. E. Kurz, C. Washburn, and A. K. Gramopadhye, "Virtual reality training integrated curriculum: An aircraft maintenance technology (AMT) education perspective," *Int. J. Eng. Educ.*, vol. 27, no. 4, p. 778, 2011.

[8] H. Puspita, A. Ana, and I. Y. Wulandari, "The Evaluation of the Learning Curriculum of the Aircraft Maintenance Training Organization 147 for Avionic Study Program as a Basis in Meeting the Need of the Aviation Industry.," *J. Eng. Educ. Transform.*, vol. 34, 2020.

[9] R. K. S. Singh, "Identifying Aircraft Maintenance Trainees' English Language Learning Needs," *Malaysian J. ELT Res.*, vol. 18, no. 2, 2021.

[10] A. S. Mahmood, N. S. M. Saad, and N. M. Nur, "Teaching English to Aircraft Maintenance Students: Challenges and Needs," *Int. J. TESOL Educ.*, vol. 3, no. 1, pp. 112–125, 2023.