

Implementation of Artificial Intelligence in Automotive Learning, Industrial Revolution 4.0 to Increase Skill Competency

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ABSTRACT

Artificial intelligence (AI) has advantages in the learning process which can increase efficiency and effectiveness in teaching (Neto, 2023). Some of the advantages of AI in the learning process include: AI can take into account students' individual needs and provide learning experiences tailored to their needs; AI can reduce the costs and time required to organize learning materials and evaluate student performance; AI can facilitate interactive learning and make it more interesting for students, thereby helping to increase students' interest in learning (Roose, 2023); AI can help reduce bias and scoring errors by taking into account more objective factors in assessing student performance, such as time spent completing assignments and answers provided. The urgency of the 2023 assignment research is to develop character education in the use of AI and how to synchronize teachers and students in using AI for the learning process. The research involved UNY students, Bali Regional Police, Automotive Department Vocational School, and DUDI automotive partners. The state of the art of this research focuses on cultivating ways or mindsets of using AI in the learning process that can be implemented in the automotive world of work. The process of identifying technology, how it works, and diagnosing damage in the world of work requires a fast time. With AI education in the automotive learning process, it can support not only the knowledge aspect but can have an impact on improving skills and competencies. It is hoped that the assistance provided will be able to shape the character and mentality of using AI in a good and useful direction in the learning process and readiness in the world of work.

Collaborative research methods will be implemented within 2 years with the target of collaboration from domestic universities, foreign universities, transportation industry and businesses, as well as government agencies that focus on transportation policy makers. Figure 3 shows the 2023 assignment research roadmap which will be implemented until 2025. The funding scheme focuses on the first and second years, while the third year is the result of evaluating whether the research is feasible to implement or needs to be revised. The assignment research was carried out at the Karanglamang Campus, Yogyakarta State University, Wates Campus, Yogyakarta State University, at the Bali Land Transportation Polytechnic Training Center, and at vocational schools in Yogyakarta. The implementation time is from 11 May to 29 September 2023. The research object focuses on students from the Department of Automotive Engineering Education, Automotive Mechanical Engineering, diploma students from the Automotive Technology Study Program of the Bali Land Transportation Polytechnic, and class XII vocational school students in Yogyakarta who have automotive study program. Applications and materials are provided to students to learn and use. Evaluations at the vocational school, diploma, applied bachelor and bachelor of education levels are made differently and adapt to the learning outcomes of each student. Of course, the preparation of development and evaluation of applications and materials will involve automotive engineering vocational school teachers, automotive engineering lecturers, and practitioners from both the industrial world and the business world operating in the automotive sector.

Kata Kunci: artificial intelligence, educational evaluation, skills competency, automotive, educational technology