Development of Performance Assessment Instruments for Measuring Drawing Skills in Vocational Students Competence in Mechanical Engineering Expertise

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ABSTRACT

Objective: This research aims to develop a performance assessment instrument that can measure Drawing Skills in Machining Engineering Skills Competency Vocational School students, in addition to determining the feasibility and results of testing the performance assessment instrument. **Method**: This research is development research with a 4D Model, which consists of four stages, namely Defining, Designing, Developing, and Disseminating, and is limited to the development stage only. **Results**: The results of the research show that the vocational school students' drawing skills instrument for machining engineering skills competency was carried out by validating the contents of the instrument using the content validity ratio (CVR) method. Instrument trials were conducted at State Vocational School 2 Surabaya in the Machining Engineering skills program, totaling thirty-one students. Of the thirty instrument items developed, the test results referred to the CVR, total correlation, OMS, and IMS criteria; two items did not meet the requirements, so these items had to be revised or eliminated. **Novelty**: This research presents novelty by designing a particular Performance Assessment instrument to measure the drawing skills of vocational school students who have technical drawing competency, especially in the psychomotor aspect, so that it will make it easier for teachers to carry out assessments.

INTRODUCTION

The 21st century is referred to as the century of knowledge, the century of information technology, globalization, the Industrial Revolution 4.0, and so on. In this century, there have been rapid and unpredictable changes in all aspects of life, including education. This rapid change can provide opportunities if appropriately utilized, but it can also be disastrous if not anticipated systematically, structured, and measurable (Fakhruddin et al., 2022). This change triggers changes in the skills needed in the world of work. To predict the skills needed will be very difficult because it depends on the field and sub-work that is the focus of these skills, so students are required to be more creative and able to adapt to face the conditions of the business world and the industrial world in the future (Dwivedi et al., 2021).

The Industrial Revolution 4.0 no longer requires a workforce only skilled in operating machines. However, it is certainly necessary to understand AI (Artificial Intelligence) better, which has been included in the latest machines (Javaid et al., 2022). In addition, (1) The production process no longer uses pure mechanisms; (2) Manual production machines have been abandoned and are not in production again; (3) All manufacturing technologies began to use numerical control; (4) Numerical control

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