

PENGEMBANGAN MEDIA LABORATORIUM VIRTUAL FISIKA BERBASIS KEARIFAN LOKAL BERBANTUAN KOMPUTER UNTUK MENINGKATKAN KETERAMPILAN PROSES SAINS DAN KEMAMPUAN MULTI REPRESENTASI PESERTA DIDIK KELAS X SMSA DI MALUKU

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ABSTRACT

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Education in Indonesia continues to experience changes with the outbreak of the corona pandemic (COVID-19). The temporary learning process must be carried out in a network, so that students' science process skills and multi-representational abilities cannot be trained in practical activities. This study aims to: (1) produce computer-assisted local wisdom-based virtual laboratory media that is appropriate for use in learning. (2) find out the effectiveness of computer-assisted local wisdom-based virtual laboratory media to improve students' science process skills and multi-representational abilities of students. Physics material namely momentum and impulse for class X is used in this study.

This study uses a Research and Development research design with a 4D model (define, design, develop, and disseminate). The subjects of this study consisted of empirical test subjects, limited trials, and wide trials. The subjects of the empirical test of the instrument involved 261 students of class XI IPA from SMA Negeri 4 Central Maluku, SMA Negeri 15 Central Maluku, and SMA Negeri 37 Central Maluku. The subject of the limited product trial involved 15 students of class XI IPA from SMA Negeri 37 Central Maluku. The subject of the wide trial involved 77 students of class X IPA from SMA Negeri 37 Central Maluku. The implementation of learning in this study used a research design, namely the pretest-posttest control group. The research instruments included product assessment sheets, student response questionnaires, science process skills test questions, and multiple representation ability test questions. Data analysis techniques in this study included the mean equation and ideal standard deviation to test product feasibility, the Aiken's V equation and partial credit model (PCM) analysis to test the validity and reliability of the test instrument, as well as the MANOVA statistical test with a significance level of 0.05 to test the effectiveness of virtual laboratories in improving science process skills and multi-representational abilities. The results showed that: (1) local wisdom-based physics virtual laboratory (BOI-LVF) was declared feasible for use in learning with a very good category based on the assessment of expert lecturers, practitioners, and student responses. (2) local wisdom-based physics virtual laboratory (BOI-LVF) is effective for use in improving students' science process skills and multi-representational abilities of students.

Keywords: physics virtual laboratory, local wisdom, science process skills, multirepresentational ability

Kata Kunci: *physics virtual laboratory, local wisdom, science process skills, multirepresentational ability*