PENGEMBANGAN MODEL PRAKTIKUM FISIKA BERBASIS PROYEK (PJB-LAB) BERBANTUAN *VIRTUAL WORKSPACE* UNTUK MENINGKATKAN KETERAMPILAN 4C, LEVEL DAN MODEL PEMAHAMAN KONSEP DAN *ATTITUDE TOWARD PHYSICS PRACTICUM*

DISERTASI

diajukan untuk memenuhi sebagian syarat untuk memperoleh
gelar Doktor Pendidikan Ilmu Pengetahuan Alam

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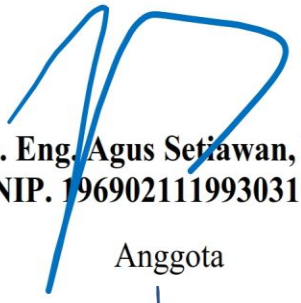

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HALAMAN PERNYATAAN KEASLIAN DISERTASI

Dengan ini saya menyatakan bahwa disertasi dengan judul "Pengembangan Model Praktikum Fisika Berbasis Proyek (PJB-Lab) Berbantuan *Virtual Workspace* untuk Meningkatkan Keterampilan 4C, Level dan Model Pemahaman Konsep dan *Attitude Toward Physics Practicum*" ini beserta seluruh isinya adalah benar-benar karya saya sendiri, dan saya tidak melakukan penjiplakan atau pengutipan dengan cara-cara yang tidak sesuai dengan etika keilmuan yang berlaku dalam masyarakat keilmuan. Atas pernyataan ini, saya siap menanggung risiko/sanksi yang dijatuhkan kepada saya apabila kemudian ditemukan adanya pelanggaran terhadap etika keilmuan dalam karya saya ini, atau ada klaim dari pihak lain terhadap keaslian karya saya ini".

Bandung, Januari 2022
Yang Membuat Pernyataan

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ABSTRAK

Penelitian ini distimulasi oleh sistem digitalisasi pendidikan era revolusi industri 4.0, dimana desain praktikum verifikasi yang diterapkan di beberapa perguruan tinggi belum membekali keterampilan 4C, belum terintegrasi dengan TIK dan belum menerapkan *assessment* praktikum secara komprehensif. Tujuan penelitian ini adalah mengembangkan dan menghasilkan model praktikum fisika berbasis proyek (PJB-Lab) berbantuan *Virtual Workspace* (VW) untuk meningkatkan keterampilan 4C, Level dan Model Pemahaman Konsep *(LMPK)* dan *Attitude Toward Physics Practicum (ATP-P).* Penelitian ini menggunakan metode penelitian dan pengembangan dengan pendekatan ADDIE: *Analyze*, *Design*, *Develop*, *Implementation* dan *Evaluation*. Subjek penelitian ini adalah 40 orang mahasiswa yang terdiri dari 23 orang perempuan dan 17 orang laki-laki pada salah satu LPTK di Aceh. Instrumen yang digunakan berupa tes keterampilan berpikir kritis, keterampilan berpikir kreatif, tes level pemahaman konsep berbentuk isian dan keterampilan komunikasi representasi informasi dalam bentuk tes uraian (esai), dan angket keterampilan komunikasi lisan, keterampilan kolaborasi, ATP-P. Hasil implementasi menunjukkan model PJB-Lab *Virtual Workspace* (VW) terbukti dapat meningkatkan keterampilan 4C, LMPK dan ATP-P mahasiswa dengan kategori tinggi. Selain itu, model praktikum PJB-Lab berbantuan *Virtual Workspace* (VW) memiliki efektivitas yang tinggi dalam meningkatkan keterampilan 4C, LMPK dan ATP-P dibandingkan dengan model verifikasi lab yang memiliki efektivitas sedang. Oleh sebab itu, dapat disimpulkan bahwa model PJB-Lab telah efektif, valid dan teruji dalam meningkatkan keterampilan 4C, LMPK dan ATP-P.

Kata Kunci*: Model praktikum fisika berbasis proyek, virtual workspace, keterampilan 4C, Level dan Model Pemahaman Konsep, Attitude toward physics practicum*

ABSTRACT

This research was stimulated by the digitalization system of education in the industrial revolution era 4.0, where practicum designs applied in several universities have not implemented 4C skills, have not been integrated with ICT and have not implemented a comprehensive practicum assessment. The purpose of this research is to develop and produce a project-based laboratory model (PJB-Lab) assisted by a Virtual Workspace (VW) to improve 4C skills, Level and Model of Concept Understanding (LMPK) and Attitude Toward Physics Practicum (ATP-P). This study uses research and development methods with the ADDIE approach: Analyze, Design, Develop, Implementation and Evaluation. The subjects of this study were 40 students consisting of 23 women and 17 men at one of the LPTKs in Aceh. The instrument used is a test of critical thinking skills, creative thinking skills, level test of concept understanding in the form of stuffing and communication skills of information representation in the form of a description test, and oral communication skills, collaboration skills, ATP-P questionnaire. The implementation results show that the PJB-Lab Virtual Workspace (VW) model is proven to be able to improve the 4C, LMPK and ATP-P skills of students with high categories. In addition, the PJB-Lab practicum model assisted by Virtual Workspace (VW) has a high effectiveness in improving 4C, LMPK and ATP-P skills compared to the lab verification model which has moderate effectiveness. Therefore, it can be concluded that the PJB-Lab model has been effective, valid and tested in improving 4C, LMPK and ATP-P skills.

Keywords*: project-based laboratorty model, virtual workspace, 4C skills, Level and model of understanding, Attitude toward physics practicum*

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