THE DEVELOPMENT OF STUDENT WORKSHEET BASED GUIDED INQUIRY USING 4-D METHOD WITH PHET SIMULATION ON WORK AND ENERGY TOPIC

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ABSTRACT

The purpose of this research are: (1) Knowing the level of LKPD feasibility that contains the Work and Energy material based on the assessment of experts; (2) Knowing student responses to LKPD that contains Work and Energy material based on student responses from the results of product trials; and (3) Knowing the LKPD based guided inquiry with PhET-Simulation developed that is suitable for student learning on work and energy in class X at SMA N 1 Labuhan Deli.

This research is the development of Research & Development model (R&D) using 4D method. Stages of research are define, design, develop, and disseminate. This research is limited to develop stage. The subject in this research is class X MIA 1 SMA N 1 Labuhan Deli A.Y 2018/2019. The instrument in this research using: LKPD, validation sheet by expert materials, validation sheet by expert media, validation sheet by an expert practitioner, questionnaire students response, and observation sheet by the observer. Technique analysis data consist of technique analysis instrument validation and analysis result. Analysis instrument validation using *Likert scale* and analysis result of research using a *Guttman scale*.

The result shows: (1) result in the level of LKPD based on Guided Inquiry with PhET Simulation according to expert material is "Excellent" (95%); according to expert media is "Excellent" (95%); and according to expert practitioner is "Excellent" (96,15%); (2) result the student responses to LKPD that contains Work and Energy material according to initial testing is "Good" (87,5%), and according to quantitative testing is "Good" (94,11%); and (3) the LKPD based guided inquiry with PhET-Simulation developed that is suitable for student learning on work and energy in class X at SMA N 1 Labuhan Deli based on instrument by expert team and students response.

Keywords: LKPD, PhET Simulation, Guided Inquiry, 4D, Work and Energy.