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Teaching Materials of Cluster Blended-Based Learning on Reduction-Oxidation Reactions to Improve Students' Scientific Literacy

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ABSTRACT

This study aims to describe the feasibility of teaching material (syllabus, Lesson Plans, Independent Learning Activity Unit and pretest-posttest question grid) of cluster-blended learning based on reduction oxidation reactions for grade X science high school chemistry learning. Validity, practicality and effectiveness were used to describe the teaching material's feasibility. Data analysis of validity, practicality, and effectiveness results showed that. The teaching materials developed are eligible with a percentage of agreement more than 75%. Therefore, cluster-blended learning teaching materials are declared to meet the validity, practical, effectiveness criteria in high category. As implication, it is feasible to use as teaching materials of reduction oxidation reactions to improve students' scientific literacy.

INTRODUCTION

Education is one of the most important fields in human life. The quality of education, especially science education in Indonesia is still low when compared to other developing countries. According to Prabowo (2018), the quality of education especially science education in Indonesia is still low when compared to other developing countries, this is because students are not trained to think in understanding natural phenomena or events with scientific methods like scientists (Rusilowati, 2015). This is evidenced by the results of the 2018 International Student Assessment (PISA), Indonesia is ranked 70 out of 78 countries with an average score of 371 (OECD, 2019; Nurut & Kanisius, 2019). Based on research conducted by Fuadi et al. (2020), there are several factors causing the low scientific literacy skills of Indonesian students proposed by researchers related to the results of the Indonesian PISA. Among them a) Selection of textbooks, b) Misconceptions, c) Learning is not contextual, d) Low reading ability, and e) The learning environment and climate are not conducive.

In OECD (2019), the ability to engage with scientific issues and ideas is called scientific literacy. Through knowledge of scientific literacy, citizens can learn to make decisions in everyday life based on an assessment of information and scientific concepts. Scientific literacy may have two different meanings. First, the description of the basic skills of reading, writing, and communicating scientifically. Second, matters relating to individual knowledge, learning, and science education (Wright et al., 2015). Scientific literacy was assessed through a Program for PISA study from the Organization for Economic Co-operation and Development (OECD). In OECD 2019, according to the PISA 2018 Science Framework, the definition of scientific literacy includes three interrelated competencies, namely: 1) Explaining phenomena scientifically; 2) Evaluating and designing scientificinquiries; 3) Interpreting data and evidence scientifically. The low level of scientific literacy in Indonesia urges immediate

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