

DEVELOPMENT OF NGSS (NEXT GENERATION SCIENCE STANDARDS) BASED INSTRUCTIONAL MODELS IN LEARNING SCIENCE BY USING ARCHIPELAGO'S LOCAL LOADING TO INCREASE DIGITAL LITERATION AND HIGH ORDER THINKING SKILLS (HOTS)

by Dadan Rosana, Sukardiyono, Rahmita, Wiwit Yuli Lestari

ABSTRACT

At present, the world is facing the Fourth Industrial Revolution which is the condition of the 21st century where there have been massive changes in various fields through the integration of technology. This change reduces the barriers between the physical, digital and biological worlds [1]. This revolution is marked by technological advances in various fields, especially artificial intelligence, robots, blockchain, nanotechnology, quantum biotechnology computers, the Internet of Things, 3D printing, and unmanned vehicles [2]. The fourth industrial revolution has the potential to improve the quality of life of people throughout the world. However, the accompanying impact of advancements in the field of automation and artificial intelligence have raised concerns that machines will one day take over human work. Because advances in artificial intelligence and automation can replace the whole human workforce. The purpose of this study is; (1) Identifying the data literacy ability of junior high school students in Takalar District (West Sulawesi) in the material interaction of living things with the environment associated with NGSS learning standards, (2) analyzing the profile of data literacy abilities by utilizing the local potential of Kuta Indigenous Village in School students Intermediate in Ciamis. The research methodology used to produce this learning model is the Research & Development of the final model as referenced by Cennamo and Kalk (2005: 6). In this spiral model known as the 5 D development phase namely; (1) definitions0 (define), (2) designs0 (designs), (3) demonstrations0 (demonstrate), (4) development (develop), and (5) presentation (deliver). The method used in testing the instrument is a test with a sample determined by purposive sampling technique. The subjects of the study sample consisted of 74 junior high school students in class VIII 2019/2020. The research instrument is in the form of 10 questions of data literacy based on NGSS dimensions in the form of essays that can help measure complex indicators of achievement. Questions are developed by researchers and validated by expert lecturers. Data analysis was carried out in the form of quantitative percentages. The results showed that the ability of data literacy in each indicator was still in the low category. The results of the analysis of the ability of data literacy with the highest percentage of 34.93% in the indicators of decision making based on data and the lowest percentage were in the indicators evaluating decisions based on data of 22.83%. For the percentage of dimensions the NGSS showed a result of 24.31% in the indicators of analyzing and interpreting data and the dimensions of cause and effect obtained 34.42%. The results of this study indicate that the ability of NGSS-based data literacy in grade VIII students in SMP Takalar Regency is in the low category. Thus, the data literacy ability of students in learning science still needs to be developed. The mandatory output produced was a scopus indexed international proceeding article (ISSE, a seminar had been held in October 2019) as well as an addition in the form of Reputable Journal Publications to be a priority. The title of the publication being reviewed is; (1) Profile Analysis of Data Literacy Capability Based on NGSS Junior High School Students in Takalar, South Sulawesi (Rahmita & D. Rosana, 2019, Journal of Physics: Conference Series), (2) Analysis of Junior High School Students' Data Literacy in Ciamis with Local Potential Kuta Indigenous Village (WY Lestari & D. Rosana, 2019, Journal of Physics: Conference Series).

Kata Kunci: *5E instructional model, NGSS, Digital literacy, HOTS*