



Integrated Science Learning Webbed Type in Permaculture Theme and BRADeR Model to Enhance Science Literacy Competence of Junior High School Students

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ABSTRACT

Objective: This research aims to assess the scientific literacy of State Junior High School 1 Ngoro students in integrated science learning using the webbed type with a permaculture theme and the BRADeR model. **Method:** This descriptive quantitative study involves 80 students from State Junior High School 1 Ngoro: 16 from class IX-A (limited trial) and 64 from IX-B and IX-C (broader trial). Data collection was conducted using a science literacy competence test instrument consisting of 10 essay questions designed according to three dimensions of scientific literacy proficiency. The validity assessment by three experts showed that 9 out of 10 questions scored an average of 4, categorizing them as "very valid," while 1 question was also deemed "very valid." The reliability assessment using Cronbach's Alpha indicates good dependability. Data analysis utilized inferential statistics to assess the viability of webbed-type integrated science learning on permaculture and the BRADeR model in improving students' science literacy. **Results:** Findings indicate a notable enhancement in science literacy, presenting a mean n-gain of 0.73, which is categorized as high. The most significant enhancement was in articulating scientific phenomena, next was experimental design and data analysis. A moderate enhancement was observed in investigating, applying, and evaluating scientific knowledge for decision-making. **Novelty:** This research examines improvements in science literacy and emphasizes the need for multimedia and multimodal approaches through integrated science learning using the webbed type and BRADeR model.

INTRODUCTION

Scientific literacy is gaining significance in aiding people to comprehend different natural occurrences, technological advancements, and societal challenges on a global scale. Nonetheless, research shows that students' levels of scientific literacy are still low. Numerous students struggle to understand and utilize basic scientific principles in practical scenarios (Putri et al., 2020). Moreover, the absence of critical and analytical thinking hinders their capacity to relate acquired knowledge to daily challenges (Nurfadhilah et al., 2023). Conventional teaching methods, combined with the restricted application of innovative techniques such as inquiry-based learning and experiments, also hinder scientific literacy growth. This emphasizes the necessity for enhancements in science education to improve students' scientific literacy abilities, allowing them to more effectively navigate future developments in science and technology.

The transformations in the 21st century, distinguished by the progress of information and communication technology, have created complexities that require individuals to master the 4C skills (Communication, Collaboration, Critical Thinking, and Problem-

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