ABSTRACT

Iqmal Meilandi Sudrajat. 2025. *Application of Web-Based Multiple Representation to Improve Critical Thinking Ability on Immune System Material.* **Pembimbing I: Prof. Dr. H. Toto Sutarto Gani Utari, M.Pd. Pembimbing II: Dr. Hj. Mimi Halimah, M.Si.**

Biology learning requires a deep understanding of scientific concepts that are abstract and complex, such as immune system material. Educators need to design learning strategies that can bridge the complexity of the material with the cognitive abilities of students so that learning activities run effectively and efficiently. In learning immune system material that uses web-based multiple representation in learning can help students to understand abstract and complex concepts. In addition, it develops creativity in learning. This study aims to obtain information about the results of the application of multiple representation-based web-based as an effort to improve students' critical thinking skills on immune system material. The research method used was pre-experimental in the form of one-group pre-test-post-test involving 36 students in class XI-6 SMA Negeri 23 Bandung. This sample was taken through purposive sampling technique based on several considerations. The instruments in this study were pre-test and post-test questions. The results showed an average pre-test score of 37.50 and an average post-test score of 73.22, and an n-gain value of 0.58 including the moderate category. Based on the results of the hypothesis test analysis, the results obtained Sig. 2-tailed <0.001 <0.05 then the alternative hypothesis (H1) is accepted which means there is an increase in students' critical thinking skills after the application of web-based based on multiple representation. This shows that through the application of web-based based multiple representation can improve students' critical thinking skills. Therefore, this strategy can be used as an alternative in learning biology that is abstract, and is recommended for educators to be applied in a similar learning process.

Keywords: Web-based, Multiple Representation, Critical Thinking