

ABSTRACT

Eunike Manurung. NIM 4193141007 (2023). Development of DNA Barcoding Student Worksheet for Biology Undergraduate Students in Invertebrate Taxonomy Course at The Universitas Negeri Medan.

DNA barcodes have revolutionized the insect taxonomy field and made the learning process of taxonomy more accessible to everyone. This study aimed to create student worksheets on DNA barcoding to improve student achievement in the learning process of insect taxonomy. The research was conducted from September to December 2022 using the 4D model (define, design, develop, and disseminate). The study involved experts in material/content and learning approach, subject lecturers, a control class (PSB A22), and an experiment class (PSB D22). The developed student worksheet product underwent validation, assessment, and response from material/content experts (95.83%), learning approach experts (95%), subject lecturers (83.33%), small group test (94.66%), and big group test (94.90%), which indicated that it was very feasible to use. Before implementation, the results of paired t-test between the control and experiment pretest results was t count = 1.76 ($p = 0.08$; $df = 31$), meaning there was no significant difference between the control and experiment pretest results. However, after implementing the student worksheets, the paired t-test between the control and experiment posttest results was t count = 6.67 ($p = 0.00$; $df = 31$), meaning there was a significant difference in learning outcome between the control and experiment posttest results. Moreover, the N-gain value obtained in the experiment class was 0.9107 means "High," indicating that applying student worksheets are more effective than just using a collection of books in increasing student achievement.

Keyword: *Student Worksheet, DNA Barcoding, Insect, Research & Development (R&D)*