

**DEVELOPING INSTRUCTIONAL MODULE ON HUMAN
IMMUNE SYSTEM FOR GRADE XI SENIOR HIGH
SCHOOL AND EVALUATING ITS EFFECT ON
STUDENT LEARNING ACHIEVEMENT**

Debora H. Hasibuan (408141046)

Abstract

This was a developmental research that purposed to develop instructional module for human immune system topic in grade XI. Research used 3D model, modification of 4D model by Thiagarajan, Semmel and Semmel (1974), namely: Define, Design, and Develop. Research started by analyzing characteristic of student, task, and concept, and specifying instructional objectives. A criterion – reference test was made based on instructional objectives and was used to measure student learning achievement. First draft of module was validated by content expert and learning design expert, result of validation showed that draft of module had been very good in aspect of material (92%), presentation (83.33%), and readability (95.83%) and had been good in aspect of graphic design (69.44). Second draft was assessed by two Biology teachers, result of assessment by teachers showed that module had been very good in aspect of material (93.75%), presentation (93.75%), readability (89.58%), and graphic design (95.83%). Utilizing third draft of module was simulated in SMA Negeri 1 Sidikalang, by 32 students grade XII who did not get human immune system topic during grade XI. Pretest was conducted before simulating module and posttest after simulation. From the simulation got mean of pretest 37.34 ± 9.068 and posttest 46.41 ± 14.823 . Through analyzing using paired t test got $t_{\text{calculation}}$ 3.157 with df 31 where t_{table} 1.695, then pretest- posttest said to be statistically different on 95% of significance. Enhancement of posttest compared to pretest was 24.29%. After simulation, students assessed the draft and result showed that module have been very good in aspect of material (80.15%), presentation (80.59%), readability (77.60%), and graphic design (86.19%). From the result of developing can be concluded: 1) Developed module have been valid from aspects of material, presentation, readability and graphic design, 2) Module utilizing gave positive effect to student learning achievement.

Keyword: Developmental Research, Instructional Module, Evaluation, Learning Achievement