

**PENGEMBANGAN E-MODUL BERBASIS *PROBLEM BASED LEARNING*  
PADA MATERI SISTEM GERAK MANUSIA DI KELAS XI MIPA  
SMA Negeri 2 Gerokgak**

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**ABSTRAK**

Penelitian ini bertujuan untuk mengetahui rancang bangun, validitas dan kepraktisan dari *e-modul* berbasis *problem based learning* pada materi sistem gerak manusia di kelas XI MIPA. Jenis penelitian ini adalah penelitian dan pengembangan (*riset and development*) dengan modul 4D yang terdiri dari 4 tahapan, yaitu tahap pendefinisian (*define*), tahap perancangan (*design*), tahap pengembangan (*development*) dan Penyebarluasan (*dessiminate*). Namun pada penelitian ini hanya sampai tahapan yang ke 3 saja yaitu tahap pengembangan (*development*). Pada penelitian ini dilakukan uji validitas oleh ahli materi, media dan bahasa, kemudian uji kepraktisan terdiri dari uji kepraktisan guru mata pelajaran biologi dan uji kepraktisan siswa kelas XI MIPA. Analisis data dilakukan secara deskriptif, kualitatif dan kuantitatif. Berdasarkan hasil penelitian didapatkan bahwa, (1) rancang bangun penelitian pengembangan ini menghasilkan *e-modul* berbasis *problem based learning* pada materi sistem gerak manusia di kelas XI MIPA, (2) Validitas *e-modul* dari segi materi, media dan bahasa masing-masing mendapatkan nilai 1 dengan kriteria sangat valid, (3) Berdasarkan uji kepraktisan guru mata pelajaran biologi, presentase kepraktisan *e-modul* sebesar 84,6%, sehingga termasuk ke dalam kategori sangat praktis Sedangkan presentase kepraktisan melalui uji kepraktisan siswa kelas XI MIPA sebesar 86,6%, sehingga termasuk ke dalam kategori sangat praktis. Berdasarkan hasil penelitian tersebut, *e-modul* berbasis *problem based learning* pada materi sistem gerak manusia di kelas XI MIPA sangat valid dan sangat praktis untuk digunakan sebagai bahan ajar pada materi sistem gerak manusia kelas XI.

**Kata Kunci:** *e-modul*, *problem based learning*, sistem gerak manusia, model pengembangan 4D.

**DEVELOPMENT OF PROBLEM-BASED LEARNING-BASED E-MODULES ON HUMAN MOTION SYSTEM MATERIALS IN CLASS XI**

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**ABSTRACT**

*This study aims to determine the design, validity and practicality of problem-based learning-based e-modules on human motion system material in class XI MIPA. This type of research is research and development with a 4D module consisting of 4 stages, namely the define stage, design stage, development stage and dissemination. However, in this study, it is only up to the 3rd stage, namely the development stage. In this study, a validity test was carried out by experts in materials, media and language, then the practicality test consisted of a practicality test for biology teachers and a practicality test for students in grade XI MIPA. Data analysis was carried out descriptively, qualitatively and quantitatively. Based on the results of the study, it was found that, (1) the design of this development research produced a problem-based learning-based e-module on human motion system material in class XI MIPA, (2) The validity of the e-module in terms of material, media and language each received a score of 1 with very valid criteria, (3) Based on the practicality test of biology teachers, the percentage of practicality of the e-module 84.6%, so it is included in the very practical category While the percentage of practicality through the practicality test of grade XI MIPA students is 86.6%, so it is included in the very practical category. Based on the results of the study, the problem-based learning e-module on the human motion system material in class XI MIPA is very valid and very practical to be used as a teaching material for the human motion system material in class XI.*

**Keyword:** *e-module, problem-based learning, human motion system, 4D development model.*