PENGEMBANGAN *E-MODUL* BERBASIS *PROBLEM BASED LEARNING* (PBL) BERBANTUAN *EXE-LEARNING* PADA MATERI SISTEM EKSKRESI MANUSIA UNTUK PESERTA DIDIK KELAS XI

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ABSTRAK

Penelitian pengembangan ini bertujuan untuk menghasilkan rancang bangun e-modul berbasis *Problem Based Learning* (PBL) pada materi sistem ekskresi manusia untuk siswa kelas XI yang valid dan praktis. Model pengembangan yang digunakan adalah model *four-D* (*Define, Design, Development,* dan *Disseminate*). Namun pada penelitian ini tahap *Disseminate* dilakukan terbatas pada pengemasan produk awal. Uji validitas pada penelitian ini dilakukan oleh masing-masing dua ahli materi dan dua ahli media yang relevan pada bidangnya. Kemudian uji kepraktisan dilakukan oleh 4 (empat) guru biologi dan seluruh peserta didik kelas XI IPA B sebanyak 35 orang. Hasil yang diperoleh adalah: (1) Tahap analisis awal ditemukan permasalahan mengenai media pembelajaran digital disekolah masih belum optimal dan bersifat monoton, rendahnya hasil belajar peserta didik sebanyak 51,35% belum mencapai standar KKTP pada materi sistem ekskresi manusia, metode pembelajaran yang didominasi dengan ceramah, presentasi-diskusi dan mencatat, bahan ajar yang sering digunakan peserta didik yaitu buku paket dan LKS berbentuk cetak, (2) rancang bangun penelitian pengembangan ini menghasilkan e-modul berbasis *Problem Based Learning* (PBL) berbantuan *exe-learning* pada materi sistem ekskresi manusia untuk siswa kelas XI, (3) Validitas e-modul berbasis *Problem Based Learning* dari segi materi dan media, masing-masing mendapatkan nilai 1,0 dengan kriteria sangat valid, (4) berdasarkan uji kepraktisan, e-modul memperoleh nilai sebesar 4,75, dari guru dan 4,63 dari peserta didik, sehingga keduanya termasuk ke dalam kategori sangat praktis. Berdasarkan hasil penelitian tersebut, e-modul berbasis *Problem Based Learning* (PBL) berbantuan *exe-learning* pada materi sistem ekskresi manusia untuk siswa kelas XI sangat valid dan sangat praktis untuk digunakan sebagai media pembelajaran pada materi sistem ekskresi manusia di SMA.

Kata Kunci: E-modul, *Problem Based Learning,* Sistem Ekskresi Manusia*, Exe-learning*

DEVELOPMENT OF A PROBLEM-BASED LEARNING (PBL)-BASED E-MODULE USING EXE-LEARNING ON THE HUMAN EXCRETORY SYSTEM MATERIAL FOR GRADE XI STUDENTS

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ABSTRAC

This development research aims to produce a valid and practical e-module design based on Problem Based Learning (PBL) for the human excretory system material for eleventh-grade students. The development model used is the four-D model (Define, Design, Development, and Disseminate). However, in this research, the Disseminate stage is limited to the initial product packaging stage. The validity test in this research is conducted by two subject matter experts and two media experts relevant to their fields. Then, the practicality test is conducted by four biology teachers and all 35 students of the XI IPA B class. The results obtained are: (1) In the initial analysis stage, problems were found regarding the use of digital learning media in schools, which are still not optimal and tend to be monotonous; the students' learning outcomes, with only 51.35%, have not met the KKTP standards for the human excretory system material. The learning methods are dominated by lectures, presentations-discussions, and note-taking, with the teaching materials frequently used by students being printed textbooks and worksheets. (2) The design and development of this research resulted in an e-module based on Problem Based Learning (PBL) assisted by exe-learning on the material of the human excretory system for eleventh-grade students, (3) the validity of the Problem Based Learning (PBL) based e-module in terms of content and media received a score of 1.0, which is classified as very valid, (4) based on the practicality test, the e-module received a score of 4.75 from teachers and 4.63 from students, making both categories very practical. Based on these research results, the Problem Based Learning (PBL) based e-module supported by exe-learning on the topic of the human excretory system for 11th-grade students is very valid and very practical for use as a teaching medium on the topic of the human excretory system in high school.

Keywords: E-module, Problem Based Learning, Human Excretory System, Exe-learning