

**PENERAPAN ACTIVE LEARNING OF OPTICS AND
PHOTONICS (ALOP) BERBANTUAN SIMULASI KOMPUTER
UNTUK MENGURANGI MISKONSEPSI SISWA KELAS XI DI
BANDUNG**

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ABSTRAK

Ketidaksesuaian konsep siswa dengan konsepyang dianut oleh para ahli disebut

miskonsepsi.MiskonsepsiterjadipadaberbagaimateriFisikasalahsatunyaadalahCahayadanOptik.TujuanpenelitianiniuntukmengetahuiefektivitasAL OP-

approachberbantuansimulasikomputeruntukmengurangimiskonsepsisis wapadamaterialat-alatoptik.Metodepenelitian yang digunakanadalahmixed methodsdengandesainpenelitianembedded mixed methods. Penelitiandilakukankepadasiswakelas XI di salahsatu SMA kota Bandung yang dibedakanmenjadiukakelompok, kelaskontroldankelaseksperimen, masing-masingkelasterdiridari 23 siswa. Kelaskontrolmenggunakanpembelajaranrankonvensional, sedangkankelaseksperimenmenggunakanpembelajaran ALOP berbantuansimulasikomputer.Instrumen yang digunakanuntukmengidentifikasisimiskonsepsisiswapadamaterialat-alatoptikadalah*Four-Tier Optics and Photonics Test* (FTOPT), terdiridari 18 item, yang diberikanpadakegiatan*pre-test*dan*post-test*padakeduakelas. Miskonsepsitersebarpada sub materimata, kamera, lup, mikroskop, danteleskop. Berdasarkan data penelitiandiperolehhasilperhitungan*effect sizedenganGlass's delta* sebesar 0,81 yang menunjukkaninterpretasitinggi, makadariituALOP-*approach*

berbantuan simulasi komputer efektif untuk mengurangi miskonsepsi siswa pada material alat optik.

Kata kunci: *Active Learning of Optics and Photonics*(ALOP); simulasi komputer; miskonsepsi; alat-alat optik.

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ABSTRACT

The incompatibility of students' concepts with the concepts agreed upon by experts is called misconception. Misconception occurs in various Physics materials, one of which is Light and Optics. The purpose of this study was to determine the effectiveness of ALOP-approach assisted with computer simulations to reduce students' misconceptions in the material of optical devices. The research method used is mixed methods with embedded mixed methods research designs. The study was conducted to class XI students in one of the high schools in Bandung which were divided into two groups, control class and experimental class, each class consisted of 23 students. The control class uses

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conventional learning, while the experimental class uses computer simulation. The instrument used to identify students' misconceptions on the material of optical devices was Four-Tier Optics and Photonics Test (FTOPT), consisting of 18 items, which were given to the pre-test and post-test activities in both classes. Misconception is spread in sub-eye material, cameras, loops, microscopes, and telescopes. Based on the research data obtained the calculation of the effect size with Glass's delta of 0.81 which indicates a high interpretation, therefore ALOP-approach assisted by computer simulation is effective to reduce students' misconceptions on optical instrument material.

Keywords: Active Learning of Optics and Photonics(ALOP); Computer Simulation; Misconceptions; Optic Devices