

THE EFFECT OF MODELLUS-BASED PBL MODELS ON CRITICAL AND CREATIVE THINKING OF CLASS IX HIGH SCHOOL STUDENTS ON WAVE MATERIAL

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ABSTRACT

This study aims to describe students' critical and creative thinking skills using the Problem-Based Learning (PBL) learning model based on modellus software on wave physics material. The place where the research was carried out was Chandra Kumala Deli Serdang Private High School.

This type of research is quasi-experimental, using the Problem-Based Learning (PBL) model based on modellus software and conventional learning. Sampling was carried out by class random sampling by taking 2 classes, namely class IX IPA-1 as the experimental class and IX IPA-2 as the control class. The instrument used is a critical thinking ability test instrument and a validated creative thinking ability test instrument.

The research results obtained from the multivariate analysis of variance pretest critical and creative thinking obtained critical $F = 15.101$; $Sig = 0.01$ and $F = 50.700$; $Sig = 0$ with a sig value obtained <0.05 . The N-gain increase in critical thinking skills in the experimental class is (0.62) higher than the control class (0.56), and for creative thinking skills in the experimental class is (0.79) higher than the control class (0.49). The conclusion from this research is that there is a significant effect of the use of modellus-based problem-based learning models on students' critical and creative thinking abilities and students' critical and creative thinking abilities also experience an increase when using modellus-based problem-based learning models.

Keywords: Problem Base Learning Model, Modellus Software, Critical Thinking, and Creative Thinking.

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PENGARUH MODEL PBL BERBASIS MODELLUS TERHADAP BERPIKIR KRITIS DAN KREATIF SISWA SMA KELAS IX PADA MATERI GELOMBANG

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ABSTRAK

Penelitian ini bertujuan untuk mendeskripsikan kemampuan berpikir kritis dan kreatif siswa dengan menggunakan model pembelajaran *Problem Based Learning* (PBL) berbasis software modellus pada materi fisika gelombang. Tempat dilaksanakannya penelitian yaitu di SMA Swasta Chandra Kumala Deliserdang.

Jenis penelitian adalah *quasi experiment*, menggunakan model *Problem Based Learning* (PBL) berbasis software modellus dan pembelajaran konvensional. Pengambilan sampel dilakukan secara *class random sampling* dengan mengambil 2 kelas yaitu kelas IX IPA-1 sebagai kelas eksperimen dan IX IPA-2 sebagai kelas kontrol. Instrumen yang digunakan adalah instrumen test kemampuan berpikir kritis dan instrument test kemampuan berpikir kreatif yang sudah divalidkan.

Hasil penelitian yang di dapat dari uji *multivariate analysis of variance pretest* berpikir kritis dan kreatif diperoleh kritis $F = 15,101$; $Sig = 0,01$ dan $F = 50,700$; $Sig = 0$ dengan nilai sig yang diperoleh $< 0,05$. Peningkatan N-gain kemampuan berpikir kritis pada kelas eksperimen yaitu (0,62) lebih tinggi dibandingkan kelas kontrol (0,56), dan untuk kemampuan berpikir kreatif di kelas eksperimen sebesar (0,79) lebih tinggi dibandingkan kelas kontrol (0,49). Kesimpulan dari penelitian ini adalah ada pengaruh yang signifikan penggunaan model *problem based learning* berbasis *modellus* terhadap kemampuan berpikir kritis dan kreatif siswa dan kemampuan berpikir kritis dan kreatif siswa juga mengalami peningkatan ketika menggunakan model *problem based learning* berbasis *modellus*.

Kata Kunci: Model Problem Base Learning, Software Modellus, Berpikir Kritis dan Berpikir Kreatif.