

**STRATEGI POE BERBANTUAN MEDIA INTERAKTIF *REFUTATIONAL*
TEXT HUKUM NEWTON BERORIENTASI KONSTRUKSI KONSEPSI
DAN MODEL MENTAL**

TESIS

diajukan untuk memenuhi sebagian syarat untuk memperoleh gelar Magister
Pendidikan Fisika



oleh

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MODEL MENTAL

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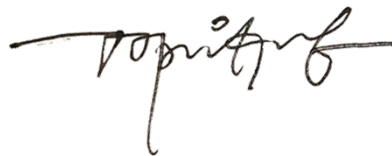
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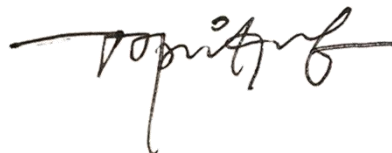


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ABSTRAK

Strategi POE berbantuan media interaktif *refutational text* Hukum Newton merupakan penggabungan antara strategi POE dengan media interaktif *refutational text* pada materi Hukum Newton. Tujuannya adalah memperoleh gambaran strategi POE berbantuan media interaktif *refutational text* yang berorientasi pada konstruksi konsepsi dan model mental. Hal ini dilakukan karena konsep merupakan sesuatu yang paling mendasar untuk dimiliki siswa ketika mengikuti proses pembelajaran. Namun, tidak jarang siswa memiliki konsepsi alternatif. Konsepsi alternatif dapat disebabkan oleh beberapa faktor seperti model mental dan proses pembelajaran yang dilakukan. Metode penelitian yang digunakan adalah *mixed methods*, dengan desain penelitian *embedded mixed methods*. Penelitian dilakukan kepada 31 siswa (15 siswa laki-laki dan 16 siswa perempuan, dengan rentang usia 15-16 tahun) kelas X di salah satu SMA Negeri di Sukabumi. Instrumen tes berupa tes diagnostik berformat *four-tier* yang dinamakan MOTION, sedangkan instrumen non-tes berupa angket tanggapan siswa dan lembar validasi RPP. Hasil penelitian menunjukkan bahwa penyisipan prinsip-prinsip POE pada bagian *refutational text* dapat menghasilkan struktur baru yaitu prediksi, penyajian konsepsi alternatif, pernyataan sanggahan, pengamatan, penjelasan hasil prediksi dan pengamatan, serta penjelasan ilmiah. Selain itu, persentase konsepsi alternatif dan model mental *initial* menurun dari *pre-test* ke *post-test*, serta dari *post-test* ke *delayed post-test*. Persentase perubahan konsepsi paling tinggi terjadi pada kategori *Acceptable Change* (AC) dari *pre-test* ke *post-test*, serta *No Change* (NCh) untuk *post-test* ke *delayed post-test*. Adapun persentase perbaikan model mental paling tinggi terjadi pada kategori *Acceptable Correction* (ACo) dari *pre-test* ke *post-test*, serta *No Correction* (NCo) untuk *post-test* ke *delayed post-test*. Oleh karena itu, strategi POE dapat digabungkan dengan media interaktif *refutational text* sehingga mengonstruksi konsepsi dan model mental siswa pada materi Hukum Newton.

Kata kunci: Hukum Newton, konstruksi konsepsi, media interaktif *refutational text*, model mental, strategi POE

POE STRATEGY ASSISTED BY REFUTATIONAL TEXT INTERACTIVE MEDIA ON NEWTON'S LAW ORIENTED CONCEPT CONSTRUCTION AND MENTAL MODELS

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ABSTRACT

POE strategy assisted by refutational text interactive media on Newton's Law is a combination of POE strategy with refutational text interactive media on Newton's Law material. The aim was to get an overview of POE strategies assisted by refutational text interactive media which oriented to the concept construction and mental models. The concept is the most basic thing for students when following the learning process. However, it is not uncommon for students to have alternative conceptions. Alternative conceptions can be caused by several factors such as students' mental models and the learning process. The research method used is a mixed methods, with an embedded mixed methods research design. The study was conducted on 31 students (15 male students and 16 female students, with an age range of 15-16 years) of class X in one of senior high schools in Sukabumi. The test instrument is a diagnostic test in form of four-tier called MOTION, while the non-test instrument is a student response questionnaire and *RPP* validation sheets. The results showed that the addition of POE principles in the refutational text could produce a new structure namely prediction, appearance of alternative conceptions, refutation statements, observation, explanation of prediction and observation, and scientific explanations. In addition, the percentage of alternative conceptions and initial mental models decreased from pre-test to post-test, as well as from post-test to delayed post-test. The highest percentage of conception changes occurred in the Acceptable Change (AC) category from pre-test to post-test, and No Change (NCh) for post-test to delayed post-test. The highest percentage of mental model improvement occurred in the Acceptable Correction (ACo) category from pre-test to post-test, and No Correction (NCo) for post-test to delayed post-test. Therefore, POE strategies can be combined with refutational text interactive media so as to construct students' conceptions and mental models on Newton's law.

Keywords: concept construction, mental model, Newton's law, POE strategy, refutational text interactive media

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