



INTISARI

Penelitian ini bertujuan untuk: (1) mendesain (merancang) model pembelajaran fisika interaktif berbasis Web; (2) mengimplementasikan rancangan model pembelajaran fisika interaktif berbasis Web, melalui pemrograman halaman-halaman Web dan menginterkoneksi dengan antarmuka (*interface*); (3) menguji-cobakan model pembelajaran fisika interaktif berbasis Web secara teknis baik di localhost maupun di jaringan Internet, sehingga dapat diakses secara global; (4) mengetahui apakah penerapan model pembelajaran yang dibuat dapat meningkatkan pemahaman siswa SMU Negeri 1 Singaraja tentang konsep kinematika gerak lurus; (5) mendeskripsikan respon/tanggapan siswa tentang model pembelajaran fisika interaktif berbasis Web yang diterapkan dalam penelitian ini.

Metode dalam penelitian ini adalah sebagai berikut. (1) Metode penentuan objek penelitian, yaitu model pembelajaran fisika interaktif berbasis Web, melalui pendekatan diskusi-informasi dengan teknik bertanya; (2) Membuat rancangan model; (3) Mengimplementasikan rancangan model dalam bentuk kode-kode pemrograman JavaScript dan ActionScript Macromedia Flash 5.0; (4) Uji coba teknis model, yaitu: uji coba model di localhost, dan uji coba model melalui jaringan Internet; (5) Penerapan model dan Pengumpulan data, yaitu: model diterapkan terhadap siswa SMU Negeri 1 Singaraja, dengan sampel sebanyak 36 orang. Data yang dikumpulkan dengan lembar Pedoman Kerja Siswa, meliputi: (a) Data Konsep Awal Siswa; (b) Data Hasil Evaluasi; dan (c) Data respon dan komentar siswa terhadap model; (6) Evaluasi model, dilakukan dalam dua tahap, yaitu uji teknis dan uji efektivitas model, dengan kriteria: (a) uji teknis berhasil, jika setelah file-file di *upload*, model dapat diakses secara global; (b) uji efektivitas berhasil, jika dengan uji t' , hipotesis dalam penelitian ini dapat diterima.

Hasil yang diperoleh dalam penelitian ini, antara lain: (1) Dengan menggunakan JavaScript dan ActionScript Macromedia Flash 5.0 dapat dibangun model pembelajaran fisika interaktif berbasis Web; (2) Interaktivitas model pembelajaran fisika berbasis Web yang telah dibangun dalam penelitian ini menunjukkan suasana realitas maya proses pembelajaran fisika secara konvensional melalui pendekatan diskusi-informasi antara Guru (*komputer client*) dan Siswa (*pengakses*); (3) Di samping dapat meningkatkan pemahaman siswa tentang konsep fisika yang dipelajari, Model Pembelajaran Fisika Interaktif Berbasis Web juga dapat membangkitkan minat dan motivasi siswa untuk belajar fisika. Hal ini dapat ditunjukkan dari uji $t' = 16,24$ ($p=0,01$) yang berarti rata-rata skor *post-test* dan rata-rata skor *pre-test* peningkatannya sangat signifikan. Di samping itu, berdasarkan respon siswa, lebih dari 84% siswa yang terlibat memberikan respon positif, kurang dari 15% merespon negatif, dan sisanya 1,1% ragu-ragu.

Kata-Kata Kunci: Rancang-Bangun, Model, Pembelajaran, Interaktif, Web





ABSTRACT

This research aims for: (1) designing the interactive model of teaching and learning physics using Web as a basis; (2) implementing the design of the interactive model of teaching and learning physics based on Web through the programming Web pages, and interconnecting them with the interface; (3) trying out the interactive model of teaching and learning physics using Web as the basis technically both in local host and in Internet network, in order to be accessed globally; (4) knowing whether the implementation of the model made can improve the understanding of the students of the SMU Negeri 1 Singaraja about the kinetic of the straight movement being presented on the Web pages; (5) describing the students' responses about the interactive model of teaching and learning physics, using Web as a basis, which was put into practice in this study.

The methods of this study can be stated as follows. (1) The method of determining the object of the study is the interactive model of teaching and learning physics using Web as a basis, which was done through information-discussion approach with a questioning technique. (2) Making the design of the model. (3) Implementing the design of model in the form of program codes by using programming language known as JavaScript and ActionScript Macromedia Flash 5.0. (4) Trying out the model technically, that is, the trying out of the model in the local host and in the Internet network. (5) The implementation of the model and the data collection, in which the model was implemented to the students of SMU Negeri 1 Singaraja, with 36 samples, which were taken randomly. The data being collected using the students' guidelines work sheet include: (a) the data concerning the students' prior knowledge; (b) the data concerning the results of the evaluation; and (c) the data concerning the students' responses and comments as to the model. (6) The Evaluation of the model was conducted in two phases, namely testing the technique and the effectiveness of the model making use of the following criteria: (a) the testing of the technique is successful if the model can be accessed globally after files are uploaded; (b) the testing of the effectiveness is successful if by using t' test, the hypothesis in this study is confirmed.

The results obtained in this study are as follows. (1) By using the JavaScript and ActionScript Macromedia Flash 5.0 can be built the interactive model of the teaching and learning physics using Web as the basis (2) The interactive model of the teaching and learning physics using Web as the basis, which was built in this study showed the illusive reality of the atmosphere of the process of conventional teaching and learning physics information-discussion approach between teachers (clients) and students (users); (3) Besides being able to increase the students' understanding about the concept of physics being learnt, the interactive model of teaching and learning physics using Web as the basis can also arouse the students' interests and motivation to learn physics. This fact can be indicated by the t' test, which equals to 16.24 ($p=0.01$), which means that average score of the post test and the pre test, which was achieved by the students increased very significantly. More over, based on the students' responses, more than 84% of students involved gave positive responses, less than 15% gave negative responses, and the rest, 1.1% were doubtful.

Key Words: *Designing, Model, Teaching and Learning, Interactive, Web*



UNIVERSITAS
GADJAH MADA

Rancang-bangun model pembelajaran fisika interaktif berbasis web dan penerapannya
SUWINDRA, I Nyoman Putu, Dr. Ahmad Ashari; M.Kom

Universitas Gadjah Mada, 2003 | Diunduh dari <http://etd.repository.ugm.ac.id/>

