# PENGEMBANGAN MULTIMEDIA INTERAKTIF BERBASIS *CODING* PADA MATERI TRANSFER ENERGI ANTARMAKHLUK HIDUP SISWA KELAS V SD

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## ABSTRAK

Penelitian ini dilatarbelakangi oleh rendahnya kemampuan berpikir kritis siswa dalam pembelajaran IPAS, serta pemanfaatan media pembelajaran yang belum optimal. Penelitian ini bertujuan untuk mengembangkan multimedia interaktif berbasis *coding* yang valid, praktis, dan efektif dalam meningkatkan kemampuan berpikir kritis siswa kelas V sekolah dasar. Jenis penelitian ini adalah *Research and Development* (R&D) dengan menggunakan model ADDIE yang meliputi lima tahapan, yaitu tahap *analyze*, *design*, *development*, *implementation*, dan *evaluation*. Subjek penelitian ini adalah 4 ahli, 3 guru, dan 9 siswa, serta siswa kelas V yang berjumlah 35 siswa. Metode pengumpulan data yang digunakan adalah metode kuesioner/angket dan tes dengan instrumen berupa lembar kuesioner/angket dengan skala penilaian dan tes esai. Analisis data menggunakan teknik analisis deskriptif kuantitatif. Hasil penelitian menunjukkan bahwa: (1) rancang bangun multimedia interaktif berbasis *coding* terdiri atas tampilan pembuka, tampilan menu utama terdiri dari menu petunjuk penggunaan, tujuan pembelajaran, mari belajar, mari berlatih, evaluasi dan *game*, dan informasi, serta tampilan akhir; (2) multimedia interaktif berbasis *coding* memperoleh indeks validitas ahli materi sebesar 0,967 dan indeks validitas ahli media sebesar 0,975 dengan kualifikasi sangat tinggi; (3) tingkat kepraktisan berdasarkan respon guru mencapai 98,89% dan respon siswa mencapai 98,33% dengan kualifikasi kepraktisan sangat baik; dan (4) uji-t berkorelasi menunjukkan nilai signifikansi (2-*tailed*) sebesar 0,001 lebih kecil dari 0,05 ($p < 0,05$), sehingga multimedia interaktif berbasis *coding* efektif untuk meningkatkan kemampuan berpikir kritis siswa pada materi Transfer Energi Antarmakhluk Hidup kelas V SD. Kesimpulannya, multimedia interaktif berbasis *coding* dinyatakan valid, praktis, dan efektif untuk meningkatkan kemampuan berpikir kritis siswa kelas V sekolah dasar. Implikasi dari penelitian ini menunjukkan bahwa media pembelajaran berbasis *coding* dapat menjadi strategi inovatif dan efektif dalam meningkatkan kemampuan berpikir kritis siswa sekolah dasar.

**Kata Kunci**: Multimedia Interaktif, *Coding*, Kemampuan Berpikir Kritis

# DEVELOPMENT OF INTERACTIVE MULTIMEDIA BASED ON CODING ON ENERGY TRANSFER BETWEEN LIVING ORGANISMS FOR FIFTH GRADE ELEMENTARY SCHOOL STUDENTS

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## ABSTRACT

This study was motivated by the low critical thinking skills of students in science learning, as well as the suboptimal use of learning media. This study aims to develop interactive multimedia based on coding which is valid, practical, and effective in improving the critical thinking skills of fifth-grade elementary school students. This type of research is Research and Development (R&D) using the ADDIE model which includes five stages, namely the analysis, design, development, implementation, and evaluation stages. The subjects of this study were 4 experts, 3 teachers, and 9 students, as well as 35 fifth grade students. The data collection method used is the questionnaire and test method with instruments in the form of questionnaire sheets with assessment scales and essay tests. Data analysis uses quantitative descriptive analysis techniques. The results of the study show that: (1) the design of interactive multimedia based on coding consists of an opening display, a main menu display consisting of a menu of usage instructions, learning objectives, let's learn, let's practice, evaluation and games, and information, as well as a final display; (2) interactive multimedia based on coding obtained a validity index of material experts of 0.967 and a validity index of media experts of 0.975 with very high qualifications; (3) the level of practicality based on teacher responses reached 98.89% and student responses reached 98.33% with very good practicality qualifications; and (4) the correlated t-test showed a significance value (2-tailed) of 0.001 which is smaller than 0.05 ($p < 0.05$), so that the interactive multimedia based on coding is effective in improving students' critical thinking skills in the material of Energy Transfer Between Living Things in fifth grade elementary school. In conclusion, interactive multimedia based on coding is declared valid, practical, and effective to improving the critical thinking skills of fifth grade elementary school students. The implications of this study indicate that learning media based on coding can be an innovative and effective strategy in improving the critical thinking skills of elementary school students.

*Keywords: Interactive Multimedia, Coding, Critical Thinking Skills*