

ABSTRAK

ARICT LEARNING: MODEL PEMBELAJARAN DIGITAL BERBASIS INTEGRASI APOS DAN KONSEP MATEMATISASI RME UNTUK MENINGKATKAN COMPUTATIONAL THINKING MAHASISWA

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Penelitian ini bertujuan untuk mengembangkan model pembelajaran digital berbasis integrasi teori APOS (*Action–Process–Object–Schema*) dan konsep matematisasi *Realistic Mathematics Education* (RME) guna meningkatkan kemampuan *Computational Thinking* (CT) mahasiswa pada pembelajaran Aljabar Linear. Latar belakang penelitian ini didasarkan pada masih rendahnya kemampuan *Computational Thinking* mahasiswa dalam mengidentifikasi masalah, mengenali pola, melakukan abstraksi, menyusun langkah penyelesaian secara algoritmik, serta mengevaluasi solusi penyelesaian masalah matematis. Kondisi tersebut dipengaruhi oleh pembelajaran yang cenderung berorientasi pada penyelesaian prosedural rutin, belum mengaitkan konsep matematika secara optimal dengan konteks nyata, serta pemanfaatan teknologi digital yang masih terbatas pada penyampaian materi dan pengumpulan tugas. Penelitian ini menggunakan pendekatan *Research and Development* (R&D) melalui tahapan studi pendahuluan, pengembangan model, validasi, dan uji coba. Model yang dikembangkan adalah ARICT (*Activate Context, Respond with Ideas, Interpret and Structure, Construct Solutions, dan Transfer and Reflect*) yang diimplementasikan dalam pembelajaran berbasis *Learning Management System* (LMS). Hasil penelitian menunjukkan bahwa model ARICT memenuhi kriteria valid, praktis, dan efektif. Model ini mampu meningkatkan kemampuan *Computational Thinking* mahasiswa yang ditunjukkan melalui peningkatan skor *N-Gain* pada seluruh aspek CT serta didukung oleh hasil uji statistik yang menunjukkan adanya perbedaan signifikan antara kelas eksperimen dan kelas kontrol. Penelitian ini memberikan kontribusi teoretis dan praktis dalam pengembangan model pembelajaran digital konstruktivistik yang terintegrasi untuk meningkatkan keterampilan berpikir tingkat tinggi mahasiswa.

Kata kunci: *Computational Thinking*, APOS, RME, pembelajaran digital, ARICT

ABSTRACT

ARICT LEARNING: A DIGITAL LEARNING MODEL BASED ON THE INTEGRATION OF APOS AND RME MATHEMATIZATION CONCEPT TO IMPROVE STUDENTS' COMPUTATIONAL THINKING

By

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This study aims to develop a digital learning model based on the integration of APOS theory (*Action–Process–Object–Schema*) and the mathematization concept of *Realistic Mathematics Education* (RME) to improve students' *Computational Thinking* (CT) skills in Linear Algebra learning. The background of this study is based on the relatively low level of students' *Computational Thinking* abilities in identifying problems, recognizing patterns, performing abstraction, constructing algorithmic solution steps, and evaluating mathematical problem-solving solutions. These conditions are influenced by learning practices that tend to emphasize routine procedural problem-solving, have not optimally connected mathematical concepts with real-world contexts, and utilize digital technology mainly for material delivery and assignment submission. This study employed a *Research and Development* (R&D) approach through the stages of preliminary study, model development, validation, and field testing. The developed model, namely ARICT (*Activate Context, Respond with Ideas, Interpret and Structure, Construct Solutions, and Transfer and Reflect*), was implemented through a *Learning Management System* (LMS)-based learning environment. The results showed that the ARICT model met the criteria of validity, practicality, and effectiveness. The model was able to improve students' *Computational Thinking* skills, as indicated by the increase in *N-Gain* scores across all CT aspects and supported by statistical test results showing significant differences between the experimental and control classes. This study provides both theoretical and practical contributions to the development of an integrated constructivist digital learning model for enhancing students' higher-order thinking skills.

Keywords: Computational Thinking, APOS, RME, digital learning, ARICT