ANALISIS *COMPUTATIONAL THINKING* DAN *PROBLEM SOLVING* SISWA SMP PADA MATERI OPERASI BENTUK ALJABAR DITINJAU DARI *SELF-REGULATED LEARNING*

TESIS

diajukan untuk memenuhi sebagian syarat memperoleh gelar Magister Pendidikan
pada Program Studi Pendidikan Matematika

Oleh

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PROGRAM STUDI MAGISTER PENDIDIKAN MATEMATIKA
FAKULTAS PENDIDIKAN MATEMATIKA DAN ILMU PENGETAHUAN ALAM
UNIVERSITAS PENDIDIKAN INDONESIA
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ANALISIS *COMPUTATIONAL THINKING* DAN *PROBLEM SOLVING* SISWA SMP PADA MATERI OPERASI BENTUK ALJABAR DITINJAU DARI *SELF-REGULATED LEARNING*

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KATA PENGANTAR

Puji syukur kehadirat Allah SWT yang telah melimpahkan rahmat, hidayah, dan karunia-Nya sehingga penulis dapat menyelesaikan tesis yang berjudul "Analisis *Computational Thinking* dan *Problem Solving* Siswa SMP pada Materi Operasi Bentuk Aljabar Ditinjau dari *Self-Regulated Learning*" ini dengan baik. Penulisan tesis ini merupakan salah satu syarat akademik untuk menyelesaikan program Magister Pendidikan pada Program Studi Pendidikan Matematika, Universitas Pendidikan Indonesia.

Proses penyusunan tesis ini tidak terlepas dari berbagai tantangan dan pembelajaran yang memberikan pengalaman berharga bagi penulis. Dalam setiap tahapan penelitian, penulis memperoleh kesempatan untuk memperdalam pemahaman terkait *computational thinking, problem solving,* dan *self-regulated learning*, yang menjadi topik utama dalam penelitian ini.

Penelitian ini diharapkan dapat memberikan kontribusi yang bermanfaat bagi dunia pendidikan, baik dalam lingkup teoritis maupun praktis. Secara teoritis, tesis ini diharapkan mampu menjadi referensi bagi peneliti selanjutnya yang ingin mengkaji lebih dalam tentang hubungan antara *computational thinking, problem solving*, dan *self-regulated learning*.

Penulis menyadari bahwa meskipun tesis ini telah disusun dengan sebaik-baiknya, masih terdapat banyak kekurangan yang memerlukan penyempurnaan. Oleh karena itu, kritik dan saran yang membangun dari pembaca sangat di harapkan demi perbaikan di masa mendatang.

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ABSTRAK

Nida Fitria (2308910). Analisis *Computational Thinking* dan *Problem Solving* Siswa SMP pada Materi Operasi Bentuk Aljabar Ditinjau dari *Self-Regulated Learning.*

Penelitian ini bertujuan untuk menganalisis kemampuan *Computational Thinking* (CT) dan *problem solving* siswa SMP pada materi operasi bentuk aljabar ditinjau dari *Self-Regulated Learning* (SRL). Penelitian menggunakan pendekatan kualitatif dengan metode studi kasus, melibatkan 23 orang siswa kelas VIII di salah satu SMP di Kabupaten Cianjur yang dikelompokkan berdasarkan tingkat SRL tinggi, sedang, rendah. Instrumen penelitian meliputi tes uraian CT dan *problem solving*, angket SRL, serta wawancara semi-terstruktur. Hasil penelitian menunjukkan bahwa siswa dengan SRL tinggi cenderung mampu memenuhi seluruh aspek *problem solving* secara menyeluruh, namun tidak dengan CT. Siswa hanya dapat melakukan abstraksi dan mampu membangun model matematis dari soal kontekstual. Pada *problem solving siswa* mampu memahami, merencanakan, melaksanakan, solusi dengan baik. Siswa dengan SRL sedang umumnya mampu memenuhi sebagian besar indikator CT dan *problem solving*, seperti melakukan abstraksi, menyusun langkah-langkah penyelesaian dasar saat menggunakan rumus dan mengelompokkan suku sejenis. Siswa dapat melakukan dekomposisi dalam masalah yang lebih rumit. Akan tetapi, dalam menggeneralisasi pola siswa sering mengalami kesulitan, misalnya saat harus membangun model matematika dari soal cerita atau menyelesaikan persamaan kuadrat. Pada *problem solving*, siswa jarang melakukan evaluasi hasil kerja. Strategi penyelesaian yang digunakan cenderung berulang dan kurang adaptif. Siswa dengan SRL rendah menunjukkan kendala pada hampir semua aspek CT dan *problem solving*. Siswa mampu menyaring informasi penting dan menyusun langkah penyelesaian secara logis, kesulitan mengidentifikasi memecah masalah, mengenali pola,. Pada *problem solving*, siswa umumnya hanya mampu menyelesaikan bagian awal soal tanpa perencanaan dan refleksi, sehingga kesalahan konsep atau prosedur pada operasi bentuk aljabar sering terulang. Pemahaman terhadap operasi dasar aljabar seperti penjumlahan, pengurangan, atau penyusunan persamaan masih sangat terbatas, serta mudah menyerah saat menghadapi soal yang menantang.

Kata Kunci: *Computational Thinking, Problem Solving, Self-Regulated Learning,* Operasi Bentuk Aljabar, Siswa SMP

ABSTRACT

Nida Fitria (2308910). Analysis of Computational Thinking and Problem Solving of Junior High School Students on the Material of Algebraic Form Operations in View of Self-Regulated Learning.

This study aims to analyze junior high school students' Computational Thinking (CT) and problem-solving abilities in algebraic operations with respect to their level of Self-Regulated Learning (SRL). A qualitative approach with a case study method was employed, involving 23 eighth-grade students from a junior high school in Cianjur Regency, who were grouped into high, medium, and low SRL levels. The research instruments consisted of CT and problem-solving essay tests, an SRL questionnaire, and semi-structured interviews. The results indicate that students with high SRL tend to be able to fulfill all aspects of problem solving comprehensively, but not all aspects of CT. These students were able to perform abstraction and construct mathematical models from contextual problems, and they demonstrated competence in understanding, planning, executing, and solving problems effectively. Students with medium SRL generally met most CT and problem-solving indicators, such as performing abstraction, arranging basic solution steps when using formulas, and grouping similar terms. They could perform decomposition on more complex problems; however, they struggled to generalize patterns, for example, when constructing mathematical models from word problems or solving quadratic equations. In problem solving, they rarely evaluated their results, and their solution strategies were often repetitive and less adaptive. Students with low SRL exhibited difficulties in almost all aspects of CT and problem solving. Although they were able to filter important information and arrange logical solution steps, they struggled to break down problems and recognize patterns. In problem solving, they typically only completed the initial part of a problem without proper planning and reflection, which often resulted in repeated conceptual or procedural errors in algebraic operations. Their understanding of basic algebraic operations such as addition, subtraction, or equation formulation was very limited, and they tended to give up easily when faced with challenging problems

Kata Kunci: Computational Thinking, Problem Solving, Self-Regulated Learning, Algebraic Operations, Junior High School Students

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