ANALISIS *COMPUTATIONAL THINKING* (CT) SISWA SEKOLAH MENENGAH PERTAMA DALAM MENYELESAIKAN MASALAH GEOMETRI DITINJAU DARI LEVEL BERPIKIR VAN HIELE

TESIS

Diajukan untuk memenuhi salah satu 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

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LEMBAR HAK CIPTA

ANALISIS *COMPUTATIONAL THINKING* (CT) SISWA SEKOLAH MENENGAH PERTAMA DALAM MENYELESAIKAN MASALAH GEOMETRI DITINJAU DARI LEVEL BERPIKIR VAN HIELE

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Sebuah tesis yang diajukan untuk memenuhi salah satu syarat untuk memperoleh gelar Magister Pendidikan (M.Pd.) pada Fakultas Pendidikan Matematika dan Ilmu Pengetahuan Alam

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LEMBAR PENGESAHAN

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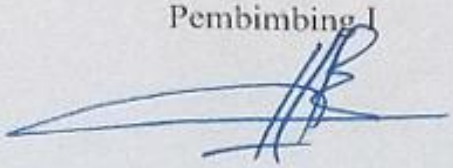

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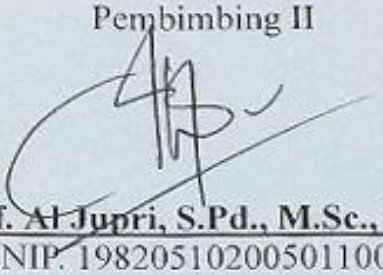

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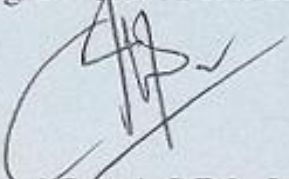

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ABSTRAK

Computational thinking (CT) melibatkan pemecahan masalah, merancang sistem, dan memahami perilaku manusia dengan memanfaatkan konsep-konsep dasar ilmu komputer. Beberapa penelitian mengungkapkan bahwa CT meningkatkan kinerja dalam pembelajaran matematika, dan memberikan cara berpikir yang berbeda serta memecahkan masalah dengan lebih mudah. Penelitian ini bertujuan menganalisis dan mendeskripsikan CT siswa sekolah menengah pertama dalam menyelesaikan masalah geometri ditinjau dari level berpikir van Hiele. Pada topik geometri, banyak siswa memahami konsep luas geometri bidang datar, namun demikian tak banyak siswa yang mampu menghitung luas suatu lahan, dimana bentuk lahan tersebut tidak beraturan. Dibutuhkan CT sebagai kemampuan analisis sehingga konsep luas yang telah dipelajari dapat diterapkan dalam menyelesaikan masalah seperti di atas. Penelitian ini merupakan penelitian kualitatif, metode penelitian dengan dasar paradigma interpretif. Penelitian ini melibatkan 25 siswa kelas VIII, kemudian dipilih 3 siswa (dengan kriteria perolehan skor tertinggi, median, dan terendah) untuk setiap level berpikir van Hiele yang selanjutnya diwawancarai dan dianalisis CT-nya ketika menyelesaikan masalah geometri. Temuan penelitian ini yaitu 25 siswa yang menjadi subjek penelitian seluruhnya berada pada level *visualization*; siswa dengan skor tertinggi mencapai komponen-komponen CT dalam menyelesaikan masalah geometri pada soal pertama, kedua, dan ketiga; Siswa dengan skor median hanya mampu mencapai komponen-komponen CT dalam menyelesaikan masalah geometri pada soal pertama – tidak pada soal kedua dan ketiga; dan siswa dengan skor terendah tidak mencapai komponen-komponen CT dalam menyelesaikan masalah geometri pada soal pertama, kedua, maupun ketiga. Dengan demikian, disimpulkan bahwa CT siswa pada level *visualization*, yang meliputi komponen *abstraction*, *decomposition*, *algorithm*, dan *evaluation of solution and strategies* tidak muncul dalam menyelesaikan masalah geometri.

Kata Kunci: *Computational Thinking* (CT), Level Berpikir van Hiele, Menyelesaikan Masalah Geometri, Geometri Bidang Datar.

ABSTRACT

Computational thinking (CT) involves solving problems, designing systems, and understanding human behavior by utilizing basic computer science concepts. Several studies reveal that CT improves performance in mathematics instruction and provides a different way of thinking and solving problems more efficiently. This study aims to analyze and describe junior high school students' CT in solving geometry problems in terms of van Hiele's level of thinking. On the topic of geometry, many students understand the concept of area of plane geometry; however, only a few students can calculate the area of land where the shape of the land is irregular. CT is needed as an analytical ability so that the concept of the area that has been learned can be applied in solving problems like the one above. This study is qualitative research, a method based on the interpretive paradigm. This study involved 25 students of class VIII, then selected three students (with the highest, median, and lowest score acquisition criteria) for each level of van Hiele thinking, who were then interviewed and analyzed CT when solving geometry problems. The findings of this study are that 25 students who became the subject of the study were all at the visualization level; students with the highest scores achieved CT components in solving geometry problems in the first, second, and third problems; Students with median scores were only able to achieve CT components in solving geometry problems in the first problem - not in the second and third problems; and students with the lowest scores did not achieve CT components in solving geometry problems in the first, second, or third problems. Thus, it is concluded that students' CT at the visualization level, which includes the components of abstraction, decomposition, algorithm, and evaluation of solutions and strategies, did not appear in solving geometry problems.

Keywords: Computational Thinking (CT), van Hiele's Levels of Thinking, Geometric Problem Solving, Plane Geometry.

DAFTAR ISI

DAFTAR GAMBAR

DAFTAR TABEL

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