

ABSTRAK

JUNITA SARI SIHOTANG. Analisis Kemampuan Berpikir Komputasi Matematis Siswa dalam Penerapan Model *Problem Based Learning*. Tesis, Medan: Program Pascasarjana Universitas Negeri Medan, Desember 2022.

Penelitian ini bertujuan untuk mendeskripsikan: (1) tingkat kemampuan berpikir komputasi matematis siswa setelah pelaksanaan model pembelajaran *problem based learning* (PBL); (2) kesulitan siswa dalam menyelesaikan tes kemampuan berpikir komputasi matematis siswa setelah pelaksanaan model pembelajaran *problem based learning* (PBL). Penelitian ini merupakan penelitian deskriptif kualitatif. Subjek penelitian ini adalah siswa SMP Negeri 4 Tebing Tinggi kelas VIII-5 yang berjumlah 42 orang, kemudian diangkat subjek wawancara berdasarkan kategori kemampuan berpikir komputasi matematis dan pola jawaban yang dominan pada setiap kategori. Adapun hasil penelitian sebagai berikut: (1) Tingkat Kemampuan berpikir komputasi matematis siswa pada materi pola bilangan setelah diterapkan model *problem based learning* (PBL) pada 42 orang siswa, terdapat 10 orang siswa memiliki kemampuan berpikir komputasi matematis kategori tinggi, 23 siswa dengan kategori sedang dan 9 orang siswa dengan kategori rendah. Untuk setiap indikator, siswa memiliki rata-rata penilaian indikator dekomposisi kategori sedang, indikator pengenalan pola kategori sedang, algoritma kategori sedang dan abstraksi dan generalisasi dengan kategori rendah. (2) Kesulitan siswa dalam menyelesaikan tes kemampuan berpikir komputasi matematis siswa dengan tingkat kemampuan berpikir komputasi matematis tinggi tidak mengalami kesulitan pada keempat indikator kemampuan berpikir komputasi matematis siswa. Siswa dengan tingkat kemampuan berpikir komputasi matematis sedang mengalami kesulitan pada indikator algoritma dan generalisasi. Siswa dengan tingkat kemampuan berpikir komputasi matematis rendah mengalami kesulitan dalam menentukan solusi yang tepat suatu masalah barisan aritmatika dan barisan geometri, kemudian siswa tidak dapat menyebutkan langkah-langkah yang digunakan untuk menyusun suatu penyelesaian dari permasalahan barisan aritmatika dan barisan geometri yang diberikan dan tidak mampu menarik kesimpulan dari suatu penyelesaian masalah soal barisan aritmatika dan barisan geometri secara tepat. Siswa mengalami 3 kriteria kesulitan yakni kriteria prinsip, prosedur dan konsep.

Kata Kunci : Kemampuan Berpikir Komputasi Matematis, Model Pembelajaran *Problem Based Learning* (PBL)

ABSTRACT

JUNITA SARI SIHOTANG. **Analysis of Students' Mathematical Computational Thinking Ability in the Application of Problem Based Learning Models.** Thesis, Medan: Postgraduate Program, State University of Medan, December 2022.

This study aims to describe: (1) the level of students' mathematical computational thinking ability after implementing the problem based learning (PBL) learning model; (2) students' difficulties in completing tests of students' mathematical computational thinking skills after implementing the problem based learning (PBL) learning model. This research is a qualitative descriptive study. The subjects of this study were 42 students of SMP Negeri 4 Tebing Tinggi class VIII-5. Then the interview subjects were appointed based on the category of mathematical computational thinking ability and the dominant answer pattern in each category. The results of the research are as follows: (1) The level of students' mathematical computational thinking ability in number pattern material after the problem based learning (PBL) model is applied to 42 students, there are 10 students who have high category mathematical computational thinking ability, 23 students are in the medium category. and 9 students with low category. For each indicator, students have an average rating of the medium category of decomposition indicators, medium category of pattern recognition indicators, medium category of algorithms and low category of abstractions and generalizations. (2) Students' difficulties in completing tests of students' computational mathematical thinking ability with high levels of mathematical computational thinking ability did not experience difficulties on the four indicators of students' computational mathematical thinking ability. Students with the ability to think computationally mathematically are having difficulty with algorithm indicators and generalizations. Students with a low level of computational mathematical thinking ability have difficulty determining the right solution to a problem of arithmetic sequences and geometric sequences, then students cannot mention the steps used to compile a solution to the given problem of arithmetic sequences and geometric sequences and are unable to draw the conclusion of a solution to the problem of arithmetic sequences and geometric sequences correctly. Students experience 3 difficulty criteria namely principle criteria, procedures and concepts.

Keywords: Mathematical Computational Thinking Ability, Problem Based Learning Models (PBL)