

## ABSTRAK

**SYARIF HIDAYAT (1503395). Analisis Kemampuan Aljabar Siswa SMP kelas VIII ditinjau dari Gaya Kognitif.**

Aljabar adalah penalaran tentang angka dengan menggunakan huruf untuk mewakilinya dan tanda sama dengan untuk mewakili hubungannya, sehingga aljabar disebut juga generalisasi dari aritmetika. Transisi dari aritmetika ke aljabar dipengaruhi oleh kemampuan kognitif. Kemampuan siswa dalam merepresentasikan benda konkret, membuat model matematis, membuat pola, menggeneralisasi, memecahkan masalah, membuktikan dan memprediksi perlu dikembangkan saat transisi tersebut agar menunjang kemampuan geometri, trigonometri, dan kemampuan lain. Tujuan penelitian untuk mendeskripsikan kemampuan aljabar siswa dalam domain kognitif. Metode penelitian yang digunakan adalah kualitatif. Partisipan penelitian diperoleh melalui *Matching Familiar Figure Test (MFFT)* yang dikembangkan Warli tahun 2010 dan Tes Kemampuan Aljabar (TKA) yang dirilis oleh *Trends in International Mathematics and Science Study (TIMMS)* tahun 2011 yang diikuti oleh 44 orang siswa. Hasil *MFFT* mengelompokkan siswa dalam kelompok siswa bergaya kognitif *impulsif* dan *reflektif*, *impulsif*, *reflektif*, dan tidak *impulsif* dan tidak *reflektif*. Hasil TKA digunakan untuk mendapatkan deskripsi kemampuan aljabar siswa dalam domain kognitif berupa *knowing*, *applying*, dan *reasoning*. Dari pengelompokan direduksi dan dipilih 6 orang siswa partisipan masing-masing 1 siswa *impulsif* dan *reflektif* (IDR), 2 siswa *impulsif* (IL dan IP), 2 siswa *reflektif* (RL dan RP), dan 1 siswa tidak *impulsif* dan tidak *reflektif* (TIR). Para partisipan kemudian diwawancarai dan diobservasi. Hasil wawancara dan observasi dianalisis untuk mendapatkan deskripsi kemampuan aljabar siswa dalam domain kognitif. Berdasarkan hasil analisis data disimpulkan bahwa siswa bergaya kognitif *impulsif* dan *reflektif* mencapai domain *knowing*, *applying*, dan *reasoning*; siswa yang bergaya kognitif *impulsif* mencapai domain *knowing* dan *applying*, sedangkan *reasoning* belum; siswa yang bergaya kognitif *reflektif* mencapai domain *knowing* dan *reasoning*, sedangkan *applying* belum; dan siswa bergaya kognitif tidak *impulsif* dan tidak *reflektif* belum mencapai domain *knowing*, *applying*, dan *reasoning*.

Kata kunci : kemampuan aljabar, *knowing*, *applying*, *reasoning*, gaya kognitif, *impulsif*, *reflektif*.

## ABSTRACT

### **SYARIF HIDAYAT (1503395). An Analysis of Ability in Algebra of Students Grade VIII SMP Viewed from Cognitive Style.**

Algebra is the reasoning numbers by using letters to represent them and equal signs to represent relationships, thus, algebra is also called generalization of arithmetic. The transition from arithmetic to algebra is influenced by cognitive abilities. Students' ability in representing concrete objects, creating mathematical models, creating patterns, generalising, problems solvings, proving, and predicting need to be developed during the transition in order to support students' ability of geometry, trigonometry, and other capabilities. The present study describes students' algebraic abilities in cognitive domains. The research is qualitative and participants were obtained through Matching Familiar Figure Test (MFFT) developed by Warli in 2010. Algebra Ability Test (*Tes kemampuan Aljabar/ TKA*) released by Trends in International Mathematics and Science Study (TIMSS) in 2011 was administered to 44 students. MFFT classifies students into four cognitive styles namely (i) impulsive and reflective, (ii) impulsive, (iii) reflective, and (iv) non impulsive and non reflective. The result of TKA is used to describe students' algebraic abilities in cognitive domains of knowing, applying, and reasoning. From the subdividing grouping, 6 participants were chosen, consisting of 1 impulsive and reflective student (IDR), 2 impulsive students (IL and IP), 2 reflective students (RL and RP), and 1 non impulsive and non-reflective student (TIR). They were then interviewed and observed to obtain a description of students' algebraic abilities in the cognitive domain. Results of data analysis suggest that the students with impulsive and reflective cognitive style reach the domain of knowing, applying, and reasoning; students with impulsive style attains domain of knowing and applying, yet they have not reached reasoning domain; students with reflective cognitive styles achieve domain of knowing and reasoning but not the applying domain; and students who are non impulsive and non reflective do not reach any of cognitive domain of knowing, applying, and reasoning.

Keywords: Ability of algebra, knowing, applying, reasoning, cognitive style, impulsive, reflective.