

**EKSPLORASI *LEARNING OBSTACLE* SISWA SMP  
DALAM MEMBANGUN KEMAMPUAN *PROPORTIONAL REASONING*:  
STUDI FENOMENOLOGI HERMENEUTIKA**

**TESIS**

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



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**PROGRAM STUDI PENDIDIKAN MATEMATIKA  
FAKULTAS PENDIDIKAN MATEMATIKA DAN ILMU PENGETAHUAN ALAM  
UNIVERSITAS PENDIDIKAN INDONESIA**

**2024**

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S.Pd. Universitas Pendidikan Indonesia, 2019

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

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## ABSTRAK

**Ahmad Zulfa Khotimi (2208492). Eksplorasi *Learning Obstacle* Siswa SMP dalam Membangun Kemampuan *Proportional Reasoning*: Studi Fenomenologi Hermeneutika**

*Proportional reasoning* adalah kemampuan untuk mendeteksi, menyatakan, menganalisis, menjelaskan, dan memberikan bukti yang mendukung pernyataan tentang hubungan proporsional. Kemampuan ini penting untuk dikuasai siswa karena membantu siswa dalam proses pembelajaran di kelas dan dalam menghadapi masalah sehari-hari. Namun, penelitian sebelumnya menunjukkan bahwa siswa SMP mengalami kesulitan dalam menyelesaikan masalah *proportional reasoning*. Penelitian ini bertujuan untuk mengeksplorasi *learning obstacle* yang dialami siswa SMP dalam membangun kemampuan *proportional reasoning*. Metode kualitatif dengan desain fenomenologi hermeneutik digunakan untuk mencapai tujuan tersebut. Subjek penelitian melibatkan 46 siswa kelas 7 SMP dan seorang guru matematika. Pengumpulan data dilakukan melalui teknik triangulasi data berupa tes, wawancara, dan studi dokumentasi. Hasil penelitian menunjukkan bahwa sebagian besar siswa menggunakan strategi yang salah dalam menyelesaikan masalah *proportional reasoning*. Hasil kajian pada rangkaian tugas yang dirancang guru dan pada buku teks matematika juga menunjukkan adanya potensi terjadinya *learning obstacle* pada siswa. Terdapat 3 jenis *learning obstacle* yang dialami siswa. Pertama, *ontogenic obstacle*, baik bersifat instrumental, konseptual, maupun psikologis disebabkan adanya ketidaksesuaian rangkaian tugas yang disajikan dengan karakteristik kemampuan siswa. Kedua, *didactical obstacle* disebabkan oleh penyajian rangkaian materi dan tugas yang kurang merepresentasikan keterkaitan struktural dan fungsional. Ketiga, *epistemological obstacle* disebabkan oleh terbatasnya konteks masalah maupun bentuk tugas yang digunakan. Berdasarkan temuan *learning obstacle*, pada penelitian ini dirancang *hypothetical learning trajectory* (HLT) dan desain didaktis hipotesis materi proporsi yang berorientasi pada pengembangan kemampuan *proportional reasoning* siswa.

**Kata Kunci:** Fenomenologi Hermeneutik; *Learning Obstacle*; *Proportional Reasoning*; Proporsi; Rasio

## ABSTRACT

**Ahmad Zulfa Khotimi (2208492). Exploration of Middle School Students' Learning Obstacles in Developing Proportional Reasoning Ability: A Hermeneutical Phenomenology Study**

Proportional reasoning is the ability to detect, state, analyze, explain, and provide evidence that supports statements about proportional relationships. This ability is important for students to master because it helps students in the learning process and in dealing with everyday problems. However, previous research has shown that junior high students have difficulty solving proportional reasoning problems. This study aims to explore the learning obstacles experienced by junior high students in building proportional reasoning skills. A qualitative method with hermeneutic phenomenological design was used to achieve these goals. The study subjects involved 46 7th grade junior high students and a math teacher. Data collection was done through data triangulation techniques in the form of tests, interviews, and documentation studies. The results showed that most students used the incorrect strategies in solving proportional reasoning problems. The results of the study on the series of tasks designed by the teacher and in the math textbook also show the potential for learning obstacles in students. There are three types of learning obstacles that students experience. First, ontogenic obstacles, both instrumental, conceptual, and psychological due to the non-conformity of the series of tasks presented with the characteristics of the student's abilities. Second, didactical obstacles are caused by the presentation of a series of materials and tasks that represent less structural and functional interrelationships. Third, epistemological obstacles are caused by the limited context of the problem and the form of the task used. Based on the findings of learning obstacles, this study designed hypothetical learning trajectory and hypothetical didactic design that develop student's proportional reasoning ability.

**Keywords:** Hermeneutic Phenomenology; Learning Obstacles; Proportional Reasoning; Proportion; Ratio

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