

## ABSTRAK

**Kurniawati, Chintya. 2019. Analisis Kemampuan Representasi Matematis Siswa Kelas VIII SMP BOPKRI 1 Yogyakarta pada Pembelajaran Matematika yang Menggunakan Pendekatan Pendidikan Matematika Realistik untuk Materi Fungsi Linear. Tesis. Program Studi Magister Pendidikan Matematika, Fakultas Keguruan dan Ilmu Pendidikan, Universitas Sanata Dharma, Yogyakarta.**

Penelitian ini bertujuan untuk (1) mendeskripsikan lintasan belajar menggunakan pendekatan pembelajaran matematika realistik untuk membelajarkan materi fungsi linear kepada siswa kelas VIII di SMP BOPKRI 1 Yogyakarta (2) mengetahui kemampuan representasi matematis siswa setelah diterapkan pendekatan pendidikan matematika realistik. Peneliti menggunakan penelitian desain sebagai jenis penelitian dalam penelitian ini, dimana peneliti mendesain HLT untuk membelajarkan materi fungsi linear dengan menerapkan PMR sebagai pendekatan pembelajarannya, kemudian menguji cobakan HLT tersebut serta melakukan analisis retrospektif. Subjek penelitian adalah 20 siswa kelas VIIIA dari SMP BOPKRI 1 Yogyakarta. Penelitian ini menggunakan tiga metode untuk mengumpulkan data yaitu dokumentasi, tes tertulis, dan wawancara tidak terstruktur. Teknik analisis data ada reduksi data, penyajian data dan penarikan kesimpulan.

Berdasarkan hasil penelitian dan analisis, diperoleh bahwa (1) pada lintasan belajar yang peneliti rancang terdapat 3 masalah pada pertemuan pertama dan 2 masalah pada pertemuan kedua. Masalah pertama pada pertemuan pertama, siswa diminta untuk mencatat ukuran sepatu dan warna favorit mereka. Setelah itu, siswa diminta untuk membuat relasi dari data tersebut. Masalah kedua pada pertemuan pertama, siswa diminta membuat diagram panah dari relasi yang diberikan kepada mereka. Kemudian siswa diminta untuk menentukan apakah relasi itu suatu fungsi atau bukan. Selain itu, mereka juga diminta untuk memberikan alasannya. Masalah ketiga pada pertemuan pertama, siswa diminta menyelesaikan masalah berapa biaya 3 ml, 5 ml, 9 ml, dan 13 ml parfum jika diketahui 8 ml parfum harganya Rp24.000. Selain itu, siswa juga diminta membuat grafik yang menghubungkan banyak parfum dan harga parfum jika banyak parfum dibeli mulai dari 1 ml sampai 10 ml. Masalah pertama pada pertemuan kedua, siswa diminta menyelesaikan masalah tentang berapa banyak uang yang harus dikeluarkan oleh Ari untuk membeli 8 kg gula jika diketahui 3 kg gula seharga Rp34.500. Selain itu, siswa juga diminta menggambar grafik untuk menunjukkan harga gula mulai dari 1 kg sampai 10 kg. Masalah kedua pada pertemuan kedua adalah siswa diminta untuk menyelesaikan masalah biaya taksi yang dibutuhkan oleh Banyu jika tarif awal taksi adalah Rp6.000 dan tarif setiap kilometer adalah Rp2.400. selain itu jarak tempuh diasumsikan, (2) Kemampuan representasi matematis siswa kelas VIII SMP BOPKRI 1 Yogyakarta setelah mengikuti proses pembelajaran dengan menggunakan PMR adalah 100% siswa mampu mencapai indikator pertama kemampuan representasi matematis yaitu siswa mampu menyajikan data atau informasi dari suatu masalah ke dalam bentuk gambar, diagram, grafik dan tabel. 100% siswa mampu mencapai indikator kedua

kemampuan representasi matematis yaitu siswa mampu menyelesaikan masalah yang melibatkan ekspresi matematis. 100% siswa mampu mencapai indikator ketiga kemampuan representasi matematis yaitu siswa mampu menuliskan langkah-langkah penyelesaian masalah matematika dengan kata-katanya sendiri. 95% siswa mampu mencapai indikator keempat kemampuan representasi matematis khususnya dalam menyelesaikan masalah kedua. Indikator kemampuan representasi yang keempat adalah siswa mampu menjelaskan pola pikir atau strategi yang digunakan untuk menyelesaikan soal.

**Kata kunci:** Kemampuan Representasi Matematis, Pendidikan Matematika Realistik, Desain Pembelajaran, Penelitian Desain.



## ABSTRACT

***Kurniawati, Chintya. 2019. The Analysis of Mathematical Representation Ability of Students Grade VIII Junior High School BOPKRI 1 Yogyakarta on Mathematics Learning that Using an Approachment of Realistic Mathematics Education for Linear Function Material. Thesis. Master of Mathematics Education Study Program, Faculty of Teacher Training and Education, Sanata Dharma University, Yogyakarta.***

*This research was aimed to (1) describe a learning trajectory that using an approachment of realistic mathematics education to teach a linear function material to students grade VIII at Junior High School BOPKRI 1 Yogyakarta (2) to find out the ability of students mathematical representation after an approachment of realistic mathematics education was applied. The researcher used design research as a type of research in this research, where the researcher designed the HLT to teach a linear function material by using RME as an approachment, then tried out the HLT and did the retrospective analysis. The subjects were 20 students grade VIIIA from Junior High School BOPKRI 1 Yogyakarta. This research used three methods to collect data namely documentation, written tests, and unstructured interviews. There were three techniques of data analysis i.e. data reduction, data presentation, and conclusion.*

*Based on the results of the research and analysis, it were found that (1) on the learning trajectory that the researcher design, there were 3 problems in the first meeting and 2 problems in the second meeting. The first problem at the first meeting, students were asked to record their shoe size and their favorite color. After that, students were asked to make relations from that data. The second problem at the first meeting, students were asked to make an arrow diagram of the relation that given to them. Then students were asked to determine whether the relationship was a function or not. In addition, they were also asked to give a reason. The third problem at the first meeting, the students were asked to solve the problem of how much it costs for 3 ml, 5 ml, 9 ml and 13 ml of perfume if it was known that 8 ml of perfume cost IDR 24000. Besides, students were also asked to make a graph that connects quantities of perfumes and the price of perfume if quantities of perfumes were purchased starting from 1 ml to 10 ml. The first problem at the second meeting, the students were asked to solve the problem about how much money should be spent by Ari to buy 8 kg of sugar if its known that 3 kg of sugar it cost IDR 34500. Besides, students were also asked to draw a graph to show the price of sugar starting from 1 kg to 10 kg. The second problem at the second meeting, the students were asked to solve the problem about the cost of a taxi that Banyu needed if the initial fare of a taxi was IDR 6000 and the fare for each kilometer was IDR 2400. Besides the distance was assumed as  $x$ , (2) The mathematical representation ability of students Grade VIII Junior High School BOPKRI 1 Yogyakarta after participating in the learning process by using RME were: 100% of students were able to reach the first indicator of mathematical representation ability that was the students being able to present the data or information from a problem in the form of image, diagram, graph, and table, 100% of students were able to reach the second indicator of mathematical*

*representation ability that was the students were able to solve the problems involving expressions of mathematics, 100% of students were able to reach the third indicator of mathematical representation ability that was the students were able to write the steps of their mathematical problem solving with their own words, 95% of students were able to reach the fourth indicator of mathematical representation ability specifically in solving the second problem. The fourth indicator of mathematics representation ability was the students were able to explain the mindset or strategy that they used to solve the problem.*

**Keywords:** *Mathematical Representation Ability, Realistic Mathematics Education, Learning Design, Design Research.*

