

Learning The Concept of Area and Perimeter by Exploring Their Relation

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Abstract

Learning the concept of perimeter and area is not easy for students in grade 3 of primary school. A common mistake is that students think that if the area is the same, the perimeter also has to be the same. It is difficult for them to understand that for a given area, there are many possibilities of perimeter and vice versa. When student are not aware of this relation they might confuse about the concept in their continuation of learning process. This research was conducted to study if it would support students' understanding of the concept of perimeter and area if we let them explore the relation between perimeter and area in the very first phase of the learning process.

Design research was chosen as the method to study this issue and the three basic principles in The Realistic Mathematics approach were applied in this study to support the learning process of perimeter and area. Real life context such as picture frames was chosen in developing a sequence of learning line to reach the learning goal of perimeter and area. The participants of this research were students and mathematics teacher of grade 3 in one of the elementary school in Surabaya. Two classes were taken to involve in the first cycle and second cycle respectively.

The teaching experiment shows that the class activities such as making photo frame, measuring photo paper with sticky paper and arranging shapes with wooden matches are activities which can be used to reveal the relation of perimeter and area. From those activities students build their own understanding that in fact area and perimeter are not in one to one correspondence, they found that for the given area they might find different perimeter or vice versa. They also found the reason why they multiply length and width to count the area of rectangular or square shape from sticky paper activity. Somehow some students were found still struggle with their understanding of area and perimeter. They often simply count the area and perimeter but when it comes into comparing the area or perimeter they still struggle to differentiate between area and perimeter.

Keywords: Perimeter, Area, Relation between perimeter and area, Understanding

Abstrak

Belajar konsep perimeter dan daerah tidak mudah bagi siswa di kelas 3 sekolah dasar. Sebuah kesalahan umum adalah bahwa siswa berpikir bahwa jika daerah tersebut adalah sama, perimeter juga harus sama. Sulit bagi mereka untuk memahami bahwa untuk daerah tertentu, ada banyak kemungkinan dari perimeter dan sebaliknya. Ketika siswa tidak menyadari hal ini hubungan mereka mungkin bingung tentang konsep dalam kelanjutan mereka proses pembelajaran. Penelitian ini bertujuan

untuk mengetahui apakah itu akan mendukung pemahaman siswa tentang konsep keliling dan luas jika kita membiarkan mereka mengeksplorasi hubungan antara perimeter dan daerah dalam tahap pertama dari proses pembelajaran.

Desain penelitian dipilih sebagai metode untuk mempelajari masalah ini dan tiga prinsip dasar dalam Pendekatan Matematika Realistik yang diterapkan dalam penelitian ini untuk mendukung proses pembelajaran dari perimeter dan daerah. Konteks kehidupan nyata seperti bingkai foto yang dipilih dalam mengembangkan urutan belajar line untuk mencapai tujuan belajar dari perimeter dan daerah. Para participants penelitian ini adalah siswa dan guru matematika kelas 3 di salah satu sekolah dasar di Surabaya. Dua kelas diambil untuk terlibat dalam siklus pertama dan siklus kedua masing-masing.

Percobaan menunjukkan bahwa kegiatan mengajar kelas seperti membuat bingkai foto, berukuran kertas foto dengan kertas lengket dan mengatur bentuk pertandingan dengan kayu adalah kegiatan yang dapat digunakan untuk mengungkapkan hubungan perimeter dan daerah. Dari kegiatan tersebut siswa membangun pemahaman mereka sendiri yang notabene luas dan keliling tidak dalam satu sampai satu korespondensi, mereka menemukan bahwa untuk daerah diberikan, mereka mungkin menemukan perimeter yang berbeda atau sebaliknya. Mereka juga menemukan alasan mengapa mereka mengalikan panjang dan lebar untuk menghitung luas bentuk persegi panjang atau persegi dari aktivitas kertas lengket. Entah bagaimana beberapa siswa ditemukan masih berjuang dengan pemahaman mereka tentang luas dan keliling. Mereka sering hanya menghitung luas dan keliling tetapi ketika datang ke membandingkan daerah atau perimeter mereka masih berjuang untuk membedakan antara luas dan keliling.

Keywords: Perimeter, Area, Hubungan antara perimeter dan area, Pemahaman

Perimeter and area become one of the interesting topics to be discussed since those two are very relevant to the real world. The concept of perimeter and area is not an easy thing to learn. Romberg (1997) states that a common difficulty regarding perimeter and area is to understand that for a given area, many perimeters are possible, and vice versa. In addition, it is frequently found that pupils mix the concepts of area and perimeter. They often tend to think that two figures with the same area also have the same perimeter (TAL Team, 2004). From an observation in a primary school in Indonesia, it was found that some pupils had counted the perimeters to answer the questions about areas (Fauzan, 2002).

Pupils are familiar with the concept of length since they were in grade 2 of primary school. For pupils who have a good understanding of perimeter as a special