

## Solving Problems with The Percentage Bar

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### *Abstract*

At the end of primary school all children more or less know what a percentage is, but yet they often struggle with percentage problems. This article describes a study in which students of 13 and 14 years old were given a written test with percentage problems and a week later were interviewed about the way they solved some of these problems. In a teaching experiment the students were then taught the use of the percentage bar. Although the teaching experiment was very short - just one lesson - the results confirm that the percentage bar is a powerful model that deserves a central place in the teaching of percentages.

**Keywords:** percentage, model, design research

### **Abstrak**

Pada saat selesai dari sekolah dasar, semua anak kurang lebih tahu apa itu persentase, tetapi mereka masih sering kesulitan dengan masalah-masalah persentase. Artikel ini menggambarkan sebuah studi dimana siswa yang berumur 13 dan 14 tahun diberikan sebuah test tertulis tentang masalah-masalah persentase dan satu minggu kemudian diwawancarai tentang cara mereka menyelesaikan beberapa masalah tersebut. Pada percobaan pengajaran, siswa kemudian diajarkan tentang penggunaan bar persentase. Meskipun percobaan pengajaran tersebut sangat singkat – hanya satu pelajaran – hasilnya menegaskan bahwa bar persentase adalah model yang sangat kuat yang patut dijadikan pusat dalam pengajaran persentase.

**Keywords:** persentase, model, penelitian desain

### *Introduction*

With a group of Indonesian master students, studying in Utrecht as participants in the Impome project<sup>1</sup>, we carried out a study in grade 7 on students' understanding of percentages. To our surprise only four out of the 14 students we tested were able to give a correct answer on the following problem: 'On a bike that normally costs €600 you get a discount of 15%. What do you have to pay?' (See figure 1). The calculations on the scrap paper we supplied in the written test suggest that 8 of the 14 students divided 600 by 15, the original price divided by the discount percentage! The bike problem seems to be a standard percentage problem, so how can it be that children in