

Rectangular Array Model Supporting Students' Spatial Structuring in Learning Multiplication

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Abstract

We examine how rectangular array model can support students' spatial structuring in learning multiplication. To begin, we define what we mean by spatial structuring as the mental operation of constructing an organization or form for an object or set of objects. For that reason, the eggs problem was chosen as the starting point in which the students could recognize such an arrangement. Geoboard was also be used as a tool to visualize the array. This research focused on a design research that was conducted in Surya Institute Program (SIP) in which investigated 12 Papuan students (between 10 and 11 years old) in connecting rectangular array model with the idea of multiplication. The result showed that rectangular array model indeed support the students to count things more efficient, able to see the structural similarities of arrays and created spatial structures for sets of objects.

Keywords: array, spatial structuring, multiplication.

Abstrak

Kami meneliti bagaimana *rectangular array model* dapat mendukung *students' spatial structuring* dalam belajar perkalian. Untuk memulai, kita mendefinisikan apa yang kita maksud dengan *spatial structuring* sebagai mental beroperasi dalam membangun sebuah organisasi atau bentuk untuk suatu obyek atau sekumpulan objek. Untuk alasan tersebut, permasalahan tentang telur terpilih sebagai titik awal pembelajaran dimana siswa bisa mengenali pengaturan tersebut. Geoboard juga digunakan sebagai alat untuk memvisualisasikan *the array*. Penelitian ini difokuskan pada desain penelitian yang dilakukan di Surya Institute Program (SIP) dengan menyelidiki 12 mahasiswa Papua (usia 10 dan 11 tahun) dalam menghubungkan *rectangular array model* dengan konsep perkalian. Hasil penelitian menunjukkan bahwa *rectangular array model* memang mendukung siswa untuk menghitung sesuatu menjadi lebih efisien, mampu melihat kesamaan struktural array dan menciptakan struktur spasial untuk suatu kesatuan benda.

Kata Kunci: array, *spatial structuring*, perkalian.

Introduction

Multiplication, as a concept and skills, is one of the learning objectives from grade 2 elementary school. It comes after basic addition and subtraction have been taught. This should make it possible for the students to conceptualize the idea of multiplying objects or figures. However, learning multiplication can be difficult for students who have difficulties in conceiving the meaning of multiplication itself. In addition,