

Learning Multiplication Using Indonesian Traditional game in Third Grade

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Abstract

Several previous researches showed that students had difficulty in understanding the basic concept of multiplication. Students are more likely to be introduced by using formula without involving the concept itself. This underlies the researcher to design a learning trajectory of learning multiplication using Permainan Tradisional Tepuk Bergambar (PT2B) as a context based on the student experience. The purpose of this research is to look at the role of PT2B in helping students' understanding in learning multiplication, which evolved from the informal to formal level in third grade with Pendidikan Matematika Realistik Indonesia (PMRI) approach. The method used is design research starting from preliminary design, teaching experiments, and retrospective analysis. This research describes how PT2B make a real contribution to the third grade students of SDN 179 Palembang to understand the concept of multiplication. The results showed PT2B context can stimulate students to understand their knowledge of the multiplication concept. The whole strategy and model that students discover, describe, and discuss shows how the students construction or contribution can uses to help their initial understanding of that concept. The stages in the learning trajectory of student have an important role in understanding the concept of the operation number from informal to the formal level.

Keyword: Design Research, PMRI, Multiplication, *Permainan Tradisional Tepuk Bergambar*

Abstrak

Beberapa penelitian sebelumnya menunjukkan bahwa siswa mengalami kesulitan dalam pemahaman konsep dasar operasi perkalian. Siswa lebih cenderung dikenalkan dengan penggunaan rumus tanpa melibatkan konsep itu sendiri. Hal ini mendasari peneliti untuk mendesain suatu pembelajaran operasi perkalian menggunakan konteks Permainan Tradisional Tepuk Bergambar (PT2B) berdasarkan pengalaman siswa (*experience-based activities*). Tujuan dari penelitian ini adalah untuk melihat peranan PT2B dalam membantu pemahaman siswa akan konsep dasar operasi perkalian, yang berkembang dari bentuk informal ke bentuk formal di kelas III dengan pendekatan Pendidikan Matematika Realistik Indonesia (PMRI). Metode yang digunakan adalah *design research* dengan tahap *preliminary design*, *teaching experiment*, dan *retrospective analysis*. Penelitian ini mendeskripsikan bagaimana PT2B memberikan kontribusi nyata pada siswa kelas III A SDN 179 Palembang untuk memahami konsep operasi perkalian. Hasilnya menunjukkan bahwa konteks PT2B dapat merangsang siswa untuk memahami pengetahuan mereka tentang

konsep perkalian. Seluruh strategi dan model yang siswa temukan, gambarkan serta diskusikan menunjukkan bagaimana konstruksi atau kontribusi siswa dapat digunakan untuk membantu pemahaman awal mereka tentang konsep perkalian. Tahapan-tahapan dalam lintasan belajar siswa memiliki peranan penting dalam memahami konsep operasi perkalian dari level informal ke formal.

Kata Kunci: *Design Research*, PMRI, Operasi Perkalian, Permainan Tradisional Tepuk Bergambar

Introduction

Reform in education has spawned several new paradigms, both in terms of curriculum, teacher's quality, and students themselves, which will result the qualified teacher working in a professional and highly educated (Whitman, 2011). It means that each teacher should be able to innovate in teaching and learning, so learning is produced in accordance with the development of education.

One of the innovations in learning mathematics is to use context as a starting point in the learning process. In the other words, as the basis of students' knowledge, the context becomes the first step to learning mathematics (Zulkardi and Ratu Ilma, 2006), one of which is the *Permainan Tradisional Tepuk Bergambar* (PT2B) context in the learning numbers operation. Learning numbers in the primary level is important for learning the other topics (Freudhental, 1973; NCTM, 2000), this is because learning numbers tend to an understanding of the notation, symbols, and the other forms that they represent (number of reference, red), so it can support students' thinking and understanding, to solve their problems (NCTM, 2000). Therefore, learning number operation, especially multiplication at the primary level becomes one of the prerequisite knowledge, which must be owned by students, to step into the next topic of learning mathematics.

Based on classroom observations conducted by researcher on subjects mathematics classroom observation, researcher found the students have learning difficulties in the calculation of units in the fourth grade, so the researcher think it looks like there is something wrong in a learning multiplication at the third grade in that school. Problems in the teaching of mathematics such as this has been investigated by Nasrullah (2011) and Kairuddin (2011), with the conclusion is PMRI approach through the right context, can solve the above problems. In addition, coordination