

Exploring Primary Student's Problem-Solving Ability by Doing Tasks Like PISA's Question

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Abstract

Problem solving plays an important role in mathematics and should have a prominent role in the mathematics education. The term "problem solving" refers to mathematics tasks that have the potential to provide intellectual challenges for enhancing students' mathematical understanding and development. In addition, the contextual problem that requires students to connect their mathematical knowledge in solving mathematical situational problem is believed to be an impact on the development students' problem-solving ability. The tasks that have been developed by PISA meet both of these criteria. As stated by the NCTM, that problem-solving skill and ability should be developed to students when they were in primary school (K5-8), therefore, it is important to do an effort to guide students in developing problem-solving ability from primary school such as accustom students to do some mathematical solving-problem tasks. Thus, in this research we tried to investigate how to develop mathematical problem-solving tasks like PISA's question that have potential effect toward students' mathematical problem-solving abilities?. We used a formative evaluation type of development research as an mean to achieve this research goal. This type of research is conducted in two steps, namely preliminary stage and formative evaluation stage covering self evaluation, prototyping (expert reviews, one-to-one, and small group), and field test. This research involve four primary schools in Palembang, there are SD Muhammadiyah 6 Palembang, MIN 1 & MIN 2 Palembang, and SDN 179 Palembang. The result of this research showed that the mathematical problem-solving tasks that have been developed have potential effect in exploring mathematical problem-solving ability of the primary school students. It is shown from their work in solving problem where all of the indicators of problem solving competency have emerged quite well category. In addition, based on interview result from some students, known that they like to do such tasks because can improve their reasoning, creativity and thinking ability.

Keywords: *development research, task of PISA, mathematical problem-solving task, problem solving competency.*

Abstrak

Pemecahan masalah mempunyai peranan yang sangat penting dalam matematika dan harus menjadi tujuan utama dalam pendidikan (pembelajaran) matematika. Istilah "Pemecahan Masalah" berhubungan dengan soal-soal yang memiliki potensi untuk memberikan tantangan yang intelektual untuk meningkatkan perkembangan dan pemahaman

matematika. Selanjutnya, masalah-masalah kontekstual yang menuntut siswa untuk menghubungkan pengetahuan matematikanya dalam menyelesaikan masalah yang berhubungan dengan kehidupan sehari-hari juga diyakini memberi pengaruh terhadap perkembangan kemampuan pemecahan masalah siswa. soal-soal yang dikembangkan dalam PISA telah memenuhi kedua criteria di atas. Sebagaimana yang dinyatakan oleh NCTM yaitu kemampuan dan ketrampilan menyelesaikan masalah harus dikembangkan siswa mulai dari sekolah dasar, oleh karena itu adalah sangat penting melakukan suatu usaha untuk membimbing siswa dalam mengembangkan kemampuan pemecahan masalah mulai dari sekolah dasar seperti membiasakan siswa untuk menyelesaikan soal-soal pemecahan masalah. sehingga, dalam penelitian ini kita mencoba untuk menyelidiki bagaimana mengembangkan soal pemecahan masalah matematika model PISA yang memiliki efek potensial terhadap kemampuan pemecahan masalah siswa?. kita menggunakan penelitian pengembangan tipe formative evaluation sebagai alat dalam mencapai tujuan penelitian ini. Jenis penelitian ini dilakukan dalam dua tahap yaitu preliminary (persiapan) dan tahap formatif evaluation yang meliputi self evaluation, prototyping (expert reviews, one-to-one, dan small group), dan field test. Penelitian ini melibatkan empat sekolah dasar di Palembang, yaitu SD Muhammadiyah 6 Palembang, MIN 1 & MIN 2 Palembang, dan SDN 179 Palembang. Hasil penelitian ini menunjukkan bahwa soal-soal pemecahan masalah matematika yang telah dikembangkan memiliki efek potensial dalam menggali kemampuan pemecahan masalah matematis siswa sekolah dasar yang ditunjukkan dengan munculnya indikator kemampuan pemecahan masalah dengan kategori cukup baik dalam menyelesaikan soal-soal yang telah dikembangkan. Selain itu, berdasarkan hasil wawancara diperoleh bahwa dengan mengerjakan soal-soal model PISA ini dapat melatih penalaran, kreatifitas serta berpikir siswa

Kata kunci: *penelitian pengembangan (development research), soal PISA, soal-soal pemecahan masalah, kemampuan pemecahan masalah.*

Introduction

Problem-solving is one of five standard mathematical competence that is the prominent object in learning mathematics conducted by the National Council of Teachers of Mathematics (NCTM) (NCTM, 2000b) and mathematics education curriculum in Indonesia (Depdiknas, 2006).

However, students' problem-solving abilities still require attention. Several research and international evaluation such as the Program for International Student Assessment (PISA) and The Third International Mathematics and Science Study (TIMSS)