

## **Improving of Junior High School Visual Thinking Representation Ability in Mathematical Problem Solving by CTL**

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### ***Abstract***

The students' difficulty which was found is in the problem of understanding, drawing diagrams, reading the charts correctly, conceptual formal mathematical understanding, and mathematical problem solving. The appropriate problem representation is the basic way in order to understand the problem itself and make a plan to solve it. This research was the experimental classroom design with a pretest-posttest control in order to increase the representation of visual thinking ability on mathematical problem solving approach with contextual learning. The research instrument was a test, observation and interviews. Contextual approach increases of mathematical representations ability increases in students with high initial category, medium, and low compared to conventional approaches.

**Keywords:** Visual Thinking Representation, Mathematical Problem Solving, Contextual Teaching Learning Approach

### ***Abstrak***

Kesulitan yang diperoleh siswa adalah pada saat memahami, menggambar diagram, membaca grafik dengan benar, pemahaman konsep matematika formal, dan penyelesaian masalah matematika. Penyajian masalah yang tepat adalah hal mendasar dalam memahami masalah tersebut dan membuat rencana untuk menyelesaikannya. Penelitian ini adalah desain kelas eksperimen dengan control pretest-posttest dalam rangka meningkatkan penyajian kemampuan berpikir visual dengan pendekatan pemecahan masalah matematika dengan pembelajaran kontekstual. Instrumen penelitian yang digunakan adalah tes, observasi dan wawancara. Pendekatan kontekstual meningkatkan kemampuan representasi matematika siswa dengan kategori tinggi, menengah, dan rendah dibandingkan dengan pendekatan konvensional.

**Keywords:** Penyajian Berpikir Visual, Penyelesaian Masalah Matematika, Pendekatan Pembelajaran Kontekstual

### ***Introduction***

Visualization has an important role in thinking development, mathematical comprehension, and the transition thinking of concrete to abstract thinking related to mathematical problem solving (Lavy, 2006). Visual thinking is interesting to be discussed since many previous studies found that to the use of improper visual representation of students have limitations and difficulties. The students' difficulty