



## The Effectiveness of the Creative-Scientific Decision Making Skills (CSDMS) Model to Practice Creative Thinking Skills and Decision Making Skills

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### ABSTRACT

This study aims to produce an effective Creative-Scientific Decision Making Skills (CSDMS) learning model that can be used in training students' creative thinking skills and decision-making skills. This study uses the One Group Pretest - Posttest design. Data were analyzed descriptively with pre-test and post-test data analysis using paired t-test in limited trials, and independent t-test in broad trials. It was concluded that the CSDMS model was declared valid both in terms of content validity and construct validity in order to improve students' creative thinking skills and decision-making skills. The results showed that the CSDMS model met the effective criteria in terms of the average n-gain of creative thinking skills in the high category and decision-making skills in the medium category, consistent with the average n-gain not significantly different in each university. It was concluded that the CSDMS model was found to be effective in improving students' creative thinking skills and decision-making skills.

## INTRODUCTION

The quality standards of education in Indonesia will continue to grow every year. The development of the quality of education in Indonesia today has led to higher-order thinking skills or often referred to as High Order Thinking. Education has a very important role in ensuring human survival, especially in the industrial world 4.0 (Malik et al., 2019). The industrial revolution 4.0 brought very fast changes in the world of education and technology (Ramankulova et al., 2016). Rapid changes require students to be able to compete in the world of education and work (Cancer & Mulej, 2015). In order to compete in the world of education and work, students must have several skills. One of the skills that students must have is creative thinking skills and decision-making skills (Handayani et al., 2021; Vrchota & Svarova., 2015).

Creative thinking is basically a way of thinking to generate new ideas or thoughts that are different from before so that they can be used to solve a problem (Ayas & Sak, 2014). Divergent thinking will produce many ideas and the truth of that thinking will be determined by logical thinking. According to Marzano & McNulty (1998) there are five aspects of creative thinking, namely: (1) Creativity is closely related to desire and effort; (2) Creativity produces something different; (3) Creativity requires more internal evaluation than external evaluation; (4) Creativity includes ideas that are not limited, and (5) Creativity often appears when doing something. There are four indicators of creative thinking, namely: (1) fluency, is the ability to generate many ideas; (2) flexibility, is the ability to generate ideas or ways that vary; (3) originality, is the ability to generate new ideas that did not exist before; (4) elaboration, is the ability to develop or add ideas so that more detailed and detailed ideas are produced (Hu & Adey, 2002). Humans who are able to express many

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