

Title	Active Learning to Develop High Order Thinking Skills by Research Synthesis: Meta Analysis
Researcher	Dr. Nitibodee Sukjaroen
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Abstract

The objective of research is to discovery and to compare the effect size form research about active learning to develop higher order thinking. The articles related to active learning that affects higher order thinking, divided into 3 sub-groups: critical thinking, creative thinking, and analytical thinking. They were searched from the Thai Journal Citation Index Center (TCI) database and passed the research quality assessment based on the type of validity. Moreover, they have sufficient for calculating the influence size. The sample group is 43 articles or 45 effect sizes. Calculating of effect size analyzed by Meta-Essentials program. That found that the distribution of effect size was high. The mean of effect size is 1.79, the 95% confidence interval is between 1.44 to 2.14. In addition, when analyzed by subgroups of thinking types, it was found that active learning can higher to lower improve analytical thinking, critical thinking, and creativity, respectively. The mean of effect size was 2.57, 1.38 and 1.13, respectively. In each subgroup, there was a high distribution of effect size. The active learning can promote higher order thinking, and each subdivision of thinking also. There is a wide range of effect size. Therefore, the method of active learning should be considered separately. Active learning that has effect size tends to be higher than the average should utilize the development of learning management styles for high efficiency. It can be summarized in 7 steps as follows: 1) the step into the lesson generate interest and present situations and problems, assign tasks, problems to a group of students Assign tasks and perform tasks. 2) Define problems, identify issues. and prioritizing issues 3) generating ideas and planning problems 4) exploring and searching 5) using the acquired information or knowledge to synthesize, explain and test hypotheses 6) expand Knowledge

+Learning in new situations through a critical thinking process 7) Summarizes knowledge, presents results and evaluates answers. If the learning management is carried out in accordance with the aforementioned steps, higher thinking skills can increase on average 2.75 times.

Keywords: Active Learning / Higher order thinking / Meta-Analysis / Effect size