

## **Effectiveness Analysis of Multimedia-based Instruction According to Cognitive Load Theory**

**Huai-Te Huang**

Ph.D. candidate at the Department of Industrial Education, National Taiwan Normal University, Taiwan (R.O.C.)

**Kuang-Yang Chung**

Ph.D. candidate at the Department of Industrial Education, National Taiwan Normal University, Taiwan (R.O.C.)

**Chun-Liang Huang**

Chinese School of Future School Education Society , Taiwan (R.O.C.)

### **Abstract:**

Based on cognitive load theory, this study aimed to determine the relative effectiveness of different instructional treatments (different types of educational objectives) and different prior knowledge levels for promoting student's learning performances. Sixty fifth-grade students were sampled as the subjects of this study. The lever principle of Nature Science and Life Technology textbook was edited with multimedia software and used as the experimental instruction material. The effectiveness analysis was conducted with 2 X 3 two-way factorial design which was consisted with two levels of goal setting (i.e., no goal setting and specific goal) and three levels of prior knowledge (i.e. high, middle and low). A significant interaction effect between goal effect based instruction and levels of prior knowledge was found after six-week teaching experiment. Besides, no goal setting mode is more effective for both high and low prior knowledge learners. But specific goal setting mode is more beneficial for middle prior knowledge learners.

### **Keywords:**

Cognitive load theory, multimedia teaching materials, appropriateness goal theory, no goal effect.