Title

The Effects of Metacognition Scaffolding on Accuracy of Metacomprehension Judgment in a Digital Environment

Abstract

Various studies show that on-screen learning is inferior to on-paper learning due to poor monitoring. Monitoring is a metacognitive process based on judgment of knowledge. Erroneous judgment leads to ineffective learning and poor achievements. One of the questions discussed in the research literature is how judgment accuracy can be improved. This study examines how metacognitive questions inserted into an on-screen text effect the judgment accuracy of primary-school students in the course of learning reading literacy and mathematics literacy.

One hundred and forty fifth-grade pupils took part in the study. They were divided into four learning groups: Group 1, engaging in reading literacy with metacognitive scaffolding and titled “read+meta”; Group 2, learning mathematics literacy and receiving metacognitive scaffolding, called “math+meta”; Group 3, engaging in reading literacy without metacognitive scaffolding and called “control\_read”; and Group 4, dealing with mathematic literacy without metacognitive scaffolding—“control\_math.”

Using courseware developed especially for the study, the participants read the texts, answered the judgment question, and were tested. After they expressed their judgments, they were presented with multiple-choice questions. Judgment accuracy was calculated by comparing judgment with actual test results in two respects: relative accuracy (resolution)—the extent to which judgments correspond to performance—and absolute accuracy (calibration), the extent to which judgment reflects performance (the absolute difference between judgment and performance).

Significant differences were found among the four groups in absolute accuracy and literacy achievements: the groups that received metacognitive scaffolding showed improvements in both parameters. No differences in relative accuracy were encountered among the groups. Thus, metacognitive scaffolding in on-screen learning is found to abet improvements in judgment accuracy and achievements in reading and mathematics literacy.