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A Preliminary Meta-analysis On the Influence of Scaffolding Characteristics and Study and Assessment Quality on Cognitive Outcomes in STEM Education

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Abstract: Computer-based scaffolding is instructional support that assists students as they generate solutions to complex and ill-structured problems, goals, or tasks, helping to increase and integrate higher-order skills in the process. In this preliminary meta-analysis in STEM education, we coded 35 studies, resulting in 97 outcomes. The average effect size for scaffolding was 0.44. Performance-adapted fading/adding led to significantly higher effect sizes than fixed fading. There were no other statistically significant differences, though trends favored adding scaffolding over fading and no-fading; principles and application-level assessment over concept level; group random over quasi-experimental and random; and under-represented over low-performing and low-income.

This poster describes our work to date in this meta-analysis project. By the end of the project, we will have coded about 150 studies. This will not be complete by CogSci2014, but estimates to date of effect sizes should be fairly accurate, with confidence intervals shrinking as we code more studies.