Grant R305F100007
Year of Study: 2011-2012

Title: The role of CLEAR thinking in learning science from multiple-document inquiry tasks
Authors: Griffin, T. D., Wiley, J., Britt, M. A., & Salas, C. R.
Citation: Griffin, T. D., Wiley, J., Britt, M. A., & Salas, C. R. (2012). The role of CLEAR thinking in learning science from multiple-document inquiry tasks. *International Electronic Journal of Elementary Education, 5*, 63-78.
Strand of Work: Basic Studies

Abstract
The purpose of the current study was to investigate whether individual differences in domain-general thinking dispositions might affect learning from multiple-document inquiry tasks in science. The students were fifty-nine seventh-grade students at an urban public school who participated during their normal science classes. Students were given a set of seven documents (including texts and graphs) and were tasked with "writing an essay to explain how and why recent patterns in global temperature might be different from what has been observed in the past." Students had 70 minutes over 2 class periods to read the documents and write their essay. Understanding was assessed with two measures: the number if key causal concepts included in student essays and proportion correct on an 18-item inference verification task. Domain-general thinking dispositions were assessed a Commitment to Logic, Evidence, and Reasoning (CLEAR) thinking scale on which students rated their agreement with 5 statements about the importance they place on using evidence to support or revise their personal beliefs. Student reading skill was assessed by having the teacher indicate each student's level of reading skill relative to their grade level as low, medium or high. Hierarchical Regression analyses revealed that both measures of understanding were uniquely predicted by reading skill and by CLEAR thinking scores, and these effects were not attributable to student's self-reported prior topic knowledge or interest. The results suggest independent roles for thinking dispositions and reading ability when students read to learn from multiple document inquiry tasks in science.

Implications
This study suggests that students have general values related to the importance that they place upon evidence-based thinking in relation to their beliefs and that these values account for some unique variance in how much they learn from an inquiry task where they are required to construct their own explanation about a scientific phenomena from a set of relevant texts and graphed data. These general values could be a potential malleable target for instruction interventions seeking to improve how students approach these sorts of learning tasks.

Acknowledgments
The research reported herein was supported by the Institute of Education Sciences, U.S. Department of Education, through Grant R305F100007 to University of Illinois at Chicago. The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education.