

NSF Grant Number: ITR-0326309

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Title: An Infrastructure for Designing and Conducting Remote Laboratories

Research Objectives:

- Design an infrastructure to enable large-scale sharing of laboratories while increasing the educational effectiveness of the laboratory experience
- Evaluate the relative strengths of hands-on, remote, and simulated laboratories

Approach:

- Comparison of remote, simulated, and hands-on laboratories using with/without evaluation techniques
- Measurement of individual differences focusing on cognitive style, using the LSQ of Mayer and Massa
- Multi-disciplinary team including engineers, psychologist and information scientist

Broader Impact:

- Improvement in engineering and science education develops a more diverse and competitive workforce

Significant Results:

- Remote laboratories appear to be as effective as hands-on labs for the class of experiments evaluated
- Student ability and cognitive style are not significantly related to satisfaction with remote laboratories, though some intriguing trends were observed

