

**Visual Cueing in Physics Problem Solving**  
Advisory Board Meeting  
4:00 P.M. Central U.S. Time, Monday, July 15<sup>th</sup>, 2013

**SUMMARY REPORT TO ADVISORY COMMITTEE**

In the 2<sup>nd</sup> year of the grant we have focused our efforts on the following:

- Dissemination:  
We have two journal publications this year...
  - 1<sup>st</sup> paper on visual cueing. Published paper is here [\[link\]](#)
  - Salience study – received reviews on manuscript. The current manuscript is here [\[link\]](#) and the reviews (with some responses) are here [\[link\]](#).We also have a conference proceedings paper...
  - This is based on the salience study and can be found here [\[link\]](#)
- Theory Building:  
We are in the process of articulating a conceptual model for visual cueing in the context of problem solving. The conceptual model combines elements of representational change theory (Ohlsson, 1992) and the cognitive theory of multimedia learning (Mayer, 2001), as well as elements of the framework for visual cueing in animations proposed by de Koning et. al, 2009. A one page description of the conceptual model is here. [\[link\]](#).
- Empirical Studies:  
Based on the conceptual model which incorporates the effects of both cues and feedback we have completed a study. In a 2 (cue vs. no cue) x 2 (feedback vs. no feedback) between subjects design we have some interesting results!!
  - Research design and sample problems are here [\[link\]](#)
  - Summary results are here [\[link\]](#)
  - Summary results by condition are here [\[link\]](#)
- Proposal Writing:  
Our proposal to IES submitted last year (September 2012) was returned without review (due to a technicality). The above study was based on a plan outlined in that proposal, and the results have been positive. So we...
  - have also resubmitted that proposal to NSF's ECR program (July 12<sup>th</sup>). See project description here [\[link\]](#).
  - plan to resubmit to Cognition & Student Learning track in IES for the September 4<sup>th</sup> deadline. The IES proposal will focus on studies in K-12 settings (the NSF focused on undergraduate classes).

Based on our efforts thus far we have the following questions:

- Does our conceptual model make sense? What other factors, if any, should we include in our conceptual model? Is there any relevant literature, especially theoretical perspectives, that we might have overlooked which can help us refine our model?
- Does the design of our empirical studies make sense? Are there aspects of the design that could be improved? Again, are there other studies that we may have overlooked that can inform our design?
- Are there any other aspects of this project that could be improved? Anything else that we should be considering. Any comments, critiques or suggestions would be welcome.