



## SUPPORTING LEARNING FROM ANIMATION

FOUNDING: 20 March 2013

### **E-CIR SCOPE**

This E-CIR began in 2013 with founding Professors from Australia (Richard Lowe, Curtin University), France (Jean-Michel Boucheix, University of Burgundy), Germany (Rolf Ploetzner, University of Education, Freiburg), and Italy (Lucia Mason, University of Padua). Its formation was motivated by accumulating evidence that explanatory animations are not a universal panacea for overcoming student difficulties in the learning of complex dynamics. Further, a range of conventional instructional interventions intended to improve animation's effectiveness had produced less-than-conclusive results. We focused instead on the novel approach of supporting learning from animation via self-generated drawing tasks.

Findings from our initial empirical studies revealed that drawing did not always produce the clear cut benefits with animation that had been achieved for learning from text. Although drawing is well suited to exploring and capturing what the subject matter of an animation looks like (visuospatial aspects), it is less effective with respect to how the subject matter behaves (spatiotemporal aspects). In contrast, the generation of demonstrations requires learners to engage with and directly reproduce the animation's dynamics. We therefore recently expanded the scope of the E-CIR to include the use of learner demonstrations. Our contention is that drawing and demonstration could each make different contributions to supporting learners' more thorough processing of animations so that they constructed better mental models of the depicted subject matter. However, the success of such interventions will very much depend on the nature of the content, the type of learning task, and the specifics of how drawing and demonstration are implemented.

The Animation Processing Model (APM) (Lowe & Boucheix, 2008) provides a key theoretical foundation for our various experimental investigations. This framework offers a systematic way of identifying likely learner processing challenges posed by complex explanatory animations. We have used the APM as a basis for devising innovative ways of ameliorating the difficulties learners face and for exploring more appropriate ways of assessing the quality of animation-based learning outcomes. Other innovative aspects of the E-CIR's work include its focus on animation per se (rather than as a mere part of a multimedia system), its concern with dynamically complex animations (rather than those depicting more simple subject matter), and the creation of new, powerful methods for investigating what happens during animation processing.

Since its inception, this E-CIR has continually sought expert feedback on its activities from the academic community by reporting outcomes and work in progress at EARLI conference



symposia and round tables (Munich, 2013; Rotterdam SIG-2, 2014; Cyprus, 2015; Geneva SIG-2, 2016). Reactions to these presentations have not only been a source of encouragement and guidance to members of the E-CIR but have also provided invaluable experience to the research students involved. We sincerely thank all those who have attended these presentations for their thoughtful and generous contributions.

## **E-CIR MEMBERS**

**Richard Lowe**

**Jean-Michel Boucheix**

**Jonathan Groff**

**Rolf Plötzner**

**Tatjana Ruf**

**Bianka Breyer**

**Lucia Mason**

## **E-CIR MEETINGS**

- October 2016
- July 2016 (SIG 2 meeting in Geneva, Switzerland)
- October 2015
- June 2015
- September 2014
- May 2014
- November 2013
- May 2013