CyGaMEs Instructional Game Design and Embedded Assessment: The Rat Gets the Cheese

Abstract

The CyGaMEs approach to instructional game design and embedded assessment measures learning, affect, and the interplay between the two. CyGaMEs is a practitioner method that aligns (a) the game system, gameplay, and game goal and (b) embedded assessment with a targeted learning domain. The CyGaMEs Timed Report tool collects embedded measures of player knowledge growth. CyGaMEs uses the flowometer (Reese, 2010), derived from Csikszentmihalyi’s Flow Theory (Csikszentmihalyi, 1988), to trace and measure player’s affective response to the learning process: e.g., before and after learning, during failure, during success, while applying new knowledge.

What is the Cheese?

Knowledge Specification

Game mechanics
Game mechanics
Game system
Game goals

Gameplay

How do learners get it?

Alignment is the Key

How do they know they got it?

Real-world • Real-time Reinforcement

How does learning affect feelings?

Unidimensional goal
Multi-dimensional goal

The CyGaMEs Approach

http://cygames.cet.edu

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Debbie Denise Reese, PI*

With: Robert Kos, Barbara S. Tatum, Brandy S. G. Guevara, Matthew B. Harter, Carsten Lightfoot, Steven N. Flaherty, and John W. Bem*  
*Wheeling Jesuit University  **Serenity Hills Informatics

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Notes

1. CSIS = Computational-Social-Information Sciences
2. ICME = Interactive Computing and Mathematical Education
3. NSF = National Science Foundation
4. REESE = Reese, D. D.
5. VSE = Visualization: Theory and Practice in Science Education

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