CyGaMEs

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CyGaMEs— A FORMULA FOR CYBERLEARNING AND ASSESSMENT – Makes Learning More Intuitive

FREE 24/7 ONLINE

METHOD
Translates expert knowledge into procedural gameplay.

The CyGaMEs approach to instructional game design and assessment aligns the game system, gameplay, and game goal with a targeted learning domain through applied cognitive science analogical reasoning theory (Reese, 2007, 2008, 2009). *Selene* is a CyGaMEs learning environment.
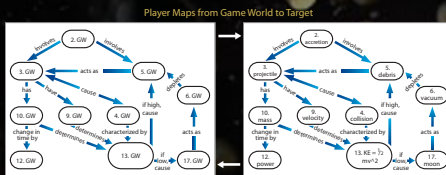
Player Maps from Game World to Target
Designer Maps from Target to Game World

CyGaMEs = Alignment

CHUCK'S KNOWLEDGE
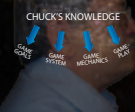
Content ↔ Game goals / Game system / Game mechanics / Gameplay

CyGaMEs guide players to discover and apply knowledge. Thus, the CyGaMEs measure of player progress toward the game goal, the Timed Report, captures player's growing knowledge of that domain.

MOTIVATION & RESULTS

CyGaMEs uses gameplay and game goals to motivate learning. Flow and the seven other channels of experience (Csikszentmihalyi, 2008) profile affective engagement. CyGaMEs measures players' flow at a randomly selected, pre-determined time within every five-minute interval. CyGaMEs *Selene* players experience the positive states that lead to flow and cause motivation.


Round 1 Flow Channels
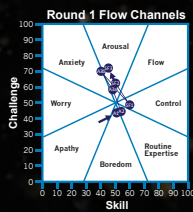
Learning should occur within a state of arousal, and *Selene* learning does.

Round 2 players experience the positive states of flow, expertise (due to round 1 learning), and control.
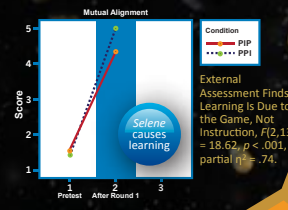
Round 2 Flow Channels
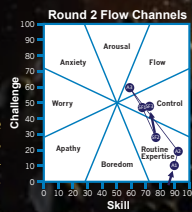
LEARNING & RESULTS

Empirical research shows:
Timed Report, a CyGaMEs embedded assessment, is a sensitive measure of learning; e.g., the learning moment explains 95 percent of the variance in exemplar players' Timed Report progress (Reese & Tabachnick, 2010).

Selene causes learning
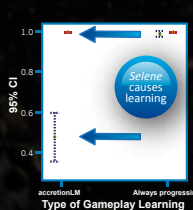
Timed Report Embedded Assessment Planned Post Hoc for accretionLM Using Pearson Product Moment, Type Determined by Algorithm; $F(1,102) = 74.38$, $p < .001$, partial $\eta^2 = .42$

Type of Gameplay Learning

Mutual Alignment

Condition: PIP / PPI

Selene causes learning

External Assessment Finds Learning Is Due to the Game, Not Instruction, $F(2,13) = 18.00$, $p < .001$, partial $\eta^2 = .74$.

Selene
A Lunar Construction Game

BUILD THE MOON AND LEARN THROUGH ENGAGING GAMEPLAY

Selene players **construct** the **Earth's Moon,** then **pepper it** with **impact craters** and **flood it** with **lava flows.**

BONUS! Includes almost 15 minutes of inspirational video instruction by acclaimed lunar scientist Dr. Charles A. Wood

Empirical research shows:
Selene causes learning.
Selene measures learning.

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