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**Zoran Popović**  
**ENGAGE: A Game Based Learning and Problem Solving**  
**Framework (Task 1 Month 4)**  
**Progress, Status and Management Report**  
**Monthly Progress Report**

**Period Covered by the Report**  
**June 1 through June 30, 2012**

Date of Report: July 13, 2012

Project Title:  
Contract Number: Grant FA8750-11-2-0102  
Total Dollar Value:  
Program Manager:

Submitted by:

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# **Technical Information**

## **1. Technical Progress / Highlights - Observations**

In June, we ramped up hiring and began concentrated development in order to meet our goal of integrating our games with school curricula in the fall of this year. We began development on an updated version of the Refraction game that supports the creation of dynamically generated levels which can combine different mathematical concepts. This is important to support the goal of an adaptive game that detects when players are having problems with specific concepts and can dynamically alter level designs in order to promote mastery of the concept. We are also incorporating knowledge gained from our tutorial study (detailed in the previous month's report) into the design of the tutorial system.

We brought two other fraction-themed games, Treefrog Treasure and Creature Capture, to a feature-complete state. These games are currently undergoing trials on various Flash game websites and in hands-on playtests with students. In particular, Treefrog Treasure was released online in a limited form and experienced a surge of popularity, gaining over 1,000,000 plays in its first week online.

We continued development on Planetopia, the "overworld" experience that ties together the various games with persistent characters and incentives to encourage multiple play sessions over time. Because activity in the overworld has tested well with children, the new features include two minigames with a multiplayer matchmaking system. These new minigames were given to our trial district in rural Alabama and we are awaiting trial data from that rollout. Additionally, we began development on an adaptive version of DragonBox, an algebra-learning game that we have agreed to co-develop with another game company.

Design and development continues on each game's Assessment Engine, the framework by which in-game performance is analyzed. We are also working on the teacher control panel, in particular the infrastructure and interface for "homeplays"-- the system that lets teachers assign certain levels or gameplay goals to students.

## **2. Results or Problems and Solutions**

During the development of Creature Capture, we noticed in playtests that children were having difficulty associating the battle animations, which occurred on a separate screen, to the relationship of the cards on the grid. Additionally, the top-down grid of cards simply did not look as exciting to children as the other games, Treefrog Treasure and Refraction, did. To address these problems, we made a significant change to the way the game looks, altering the game board to an isometric view and placing card battle animations on the board itself (as opposed to on its own screen). The new isometric view with in-line battles helps associate the result of each card battle with the card's fractional value. Playtests with the new field design are scheduled for July and August.

## **3. Significant Accomplishments Anticipated During Next Reporting Period**

We will have three fraction games (Refraction 2, Creature Capture and Treefrog Treasure) fully integrated into the social world called Planetopia. These games and the overworld will undergo significant playtesting both in on-site and in trials on various websites. We will have a working version of DragonBox and we will begin to integrate that into the overworld and the Teacher Control Panel.

Multiple games will be moved to the staging server and undergo load testing in anticipation of wider releases to schools beginning in August and continuing through the Fall.

#### **4. Publications relevant to this effort**

No new research papers were published in the June 1 – 30<sup>th</sup> timeframe.

DragonBox: Algebra Beats Angry Birds – Wired.com:

<http://www.wired.com/geekdad/2012/06/dragonbox/all/>

#### **5. Meetings and Events (Please include meetings with subcontractors)**

Presentations about our work at:

- Gamification Summit 2012
- Mensa Colloquium 2012.2: Social and Video Games
- Seattle Science Festival
- TED Salon Vancouver : <http://talentsearch.ted.com/video/Zoran-Popovic-Massive-multiplay;TEDVancouver>
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#### **6. Changes to the Contract Organization**

None.