Gamification Elements and Real-Time Assessment in SAGE

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Motivation

Related Works

Proposal

Milestones

Motivation
Related Works
Proposal
Milestones

Motivation

- Improve upon Formative SAGE Assessments architecture
  - HTTP API will be created for the SAGE assessment server
- Scaffold Computational Thinking through real-time feedback
  - Add real time UI feedback within Scratch Editor student view
- Motivate students through gamification
  - Each assessment can be associated with points which can be earned over the course of one project
  - Leaderboards

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Related Works

Scratch

Scratch Projects

https://scratch.mit.edu/projects/92837313/

Formative SAGE Assessments

Gamification in Education: What, How, Why Bother?

http://www.academia.edu/570970/Gamification_in_Education_What_How_Why_Bother

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Game Design Elements in SAGE Pt 1

Gamification elements can be added to make learning fun.

- Real time feedback
- Scaffolding will improve learning
- Scratch Editor will respond to
  - Passing of each "level" in the game.
  - Usage of particular blocks

Game Design Elements in SAGE Pt 2

Reward mechanisms

- Blocks will be associated with different point values. Blocks that represent more complex programming concepts will be worth more points.
- Trophies after every level. Trophies can be awarded for things like achieving certain milestones, using a certain number of points, or using certain blocks.
- Leaderboard shows students with top scores. Updated as students complete levels.
- Indicators on blocks that suggest to the student to use some particular block

Architecture

- Real-Time Communication
  - Implementation of a SAGE assessment server API which sends and receives HTTP web requests
  - Creation of Scratch editor communication blocks which connect to the assessment server API
- Logging
  - Analysis of what data to store
  - Design of data storage format
  - Implementation of logging functions in Scratch editor

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Milestones

Game Design Elements

Oct 14, 2016   Design of game elements

Oct 28, 2016   Implementation of real time Scratch Editor feedback

Nov 11, 2016   Implementation of point/trophy system
Communication with backend architecture

Nov 25, 2016   Implementation of leaderboards

Dec 9, 2016   Improvements

Milestones

Architecture

Oct 14, 2016   Design of API endpoints

Oct 28, 2016   Implementation of API endpoints

Nov 11, 2016   Implementation of Scratch editor communication blocks

Nov 25, 2016   Analysis of data to be logged

Dec 16, 2016   Implementation of database and logging