# **Project Proposal: Arithmagician**

## **Project Brief**

Arithmagician is a browser-based game designed to introduce algebra and computation concepts to middle school students. After creating and logging into their accounts, players will control a wizard as he explores a bewitched castle, using blocks, beams, and magical powers to defeat the Ouroboros while learning about functions, variables, and other profound ideas. Arithmagician will present its lessons organically in a world of immersive story, atmosphere, gameplay, graphics, music, and sound. When a player logs out of Arithmagician his progress will be saved to the cloud so he can resume his journey later, exactly where he left off.

## **Project Description**

### **Problem to be Solved**

Many years ago I was a child. I loved playing video games, but I never played educational games by choice. Educational games bored me with their repetitive and uninspired gameplay, and even then I sensed that they were not labors of love. Five years ago I worked for a large educational game studio in Provo, and after sampling the company’s offerings I saw that not much has changed since I was young.

Ironically, many educational games fail to teach; they are typically bright and noisy veneers concealing interchangeable sets of flash cards. And while flash cards have their place in schooling, they don’t often lead to insight, tending instead to reiterate facts already learned.

### **Project Goals**

My overarching goal in developing Arithmagician is to create an educational game that children and teenagers actually enjoy playing. To address the problem of disinterest in educational games, I will develop the game with the following principles in mind.

**Arithmagician is a game before all else.** When education conflicts with fun, fun gets priority.

**Gameplay and lessons should mesh.** The game’s environments and the player’s actions should have a genuine connection with the ideas I hope to teach.

**Do not deceive.** Using the trappings of a game to trick a child into doing something he finds uninteresting is arguably immoral and definitely ineffective.

**Offer variety.** Many educational games present an endless stream of repetitive content. Consumers of creative products can sense a creator’s lack of interest and effort, and resent it.

**Learning is exploration.** Do not present the game as a linear sequence of screens. Instead, allow the player to discover truths as he explores, and he will treasure them.

**Story matters.** People are emotional beings. We identify with protagonists, find conflict and resolution compelling, and will persevere with a story through challenges if we care about its characters and outcome.

## **Stakeholder**

I am the sole stakeholder for this project, but I intend to share my ideas and prototypes with testers and educators to generate feedback. Once I have a working prototype I will contact administrators and teachers at local schools to discuss what expectations they have for the educational software used in their classrooms. If I am satisfied with Arithmagician at the end of this semester I will continue to develop it for eventual release.

## **Features to be Implemented**

* Game engine
  + Player and block movement
  + Expression evaluation
  + Text presentation
  + Area data format
  + World navigation and area transitions
  + Sound and music playback
  + Rendering and shaders
* Level editor
  + Object creation
  + Object inspection and editing
  + Selection and copying
  + Area resizing
  + Area-to-area linking
  + Saving
  + Loading
* Assets
  + Puzzles
  + Sound
  + Music
  + Images
  + Story
* Login screen
  + Account creation
  + Login
  + Username/password retrieval
* Title screen
  + Save file selection
  + Log out
* Options menu
  + Volume control
  + Key binding customization
* Hosting
  + Domain name registration
  + Auth server
  + File server
  + User progress database

## **Licensing and Intellectual Property**

I (Kent Gardner) own all code and intellectual property associated with this project.