Quizard Quest: Technical Document

Software Requirements:

Listing of Required Software By Layer

1. **Front End User Interface**
   a. *Apache HTTP Server*
   b. *HTML*
   c. *CSS*
   d. *JavaScript*
   e. *jQuery*
2. **Middle Layer**
   a. *PHP*
   b. *API*
      i. *Facebook Connect API*
      ii. *OAuth*
3. **Database Layer**
   a. *MySQL*

Overview of Required Software

Front End User Interface

The front end interface for both Android and the online Web Application will use a combination of CSS, JavaScript, and jQuery to style and provide action to HTML content provided by the Apache HTTP Server.

Middle Layer

The middle layer will have PHP providing two different types of functionality.

1. To dynamically generate the HTML content that will be delivered to the Web Application end-user.
2. Provide a RESTful API for accessing and modifying our database, and for generating JSON/XML results for both the Website and Android applications.

Database Layer

MySQL will be our database of choice. We will be using the storage engine InnoDB for its ability to require enforcement of constraints.

Use Case:
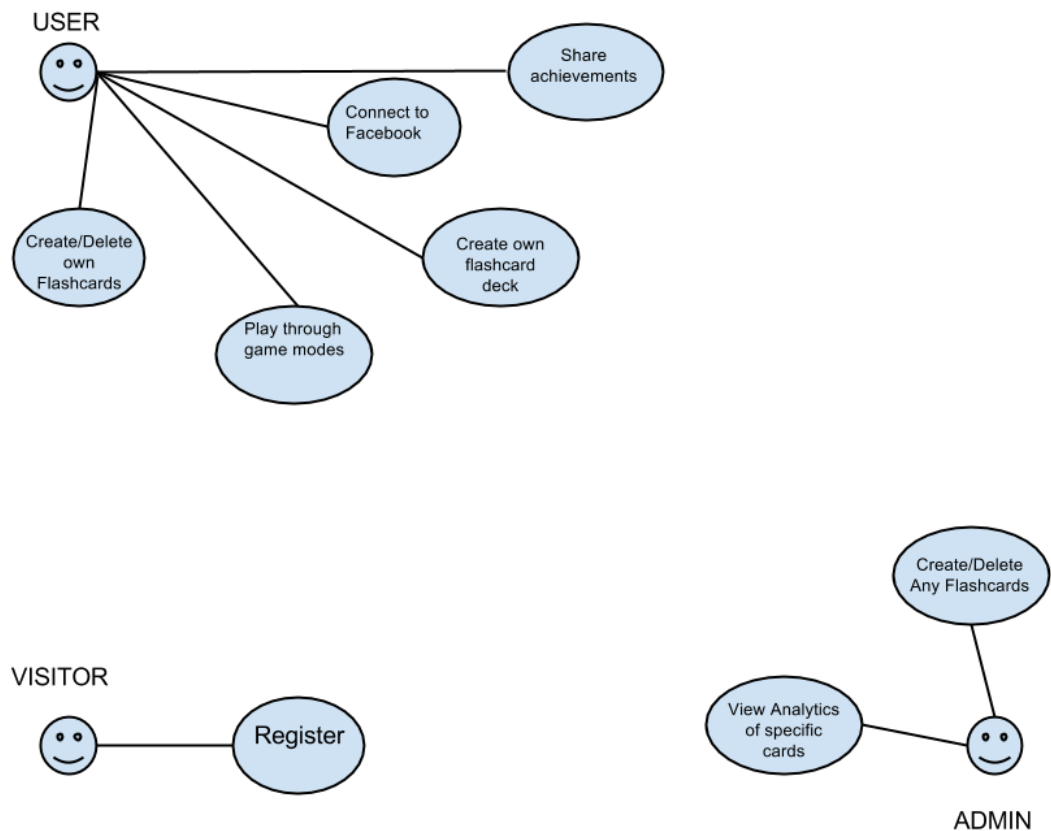
Users:

- Can create or delete their own flashcards
- Create a flashcard deck from their own or other users flashcards
- Connect their account through Facebook
- Play any of the game modes (Training, Quest, Save the World)
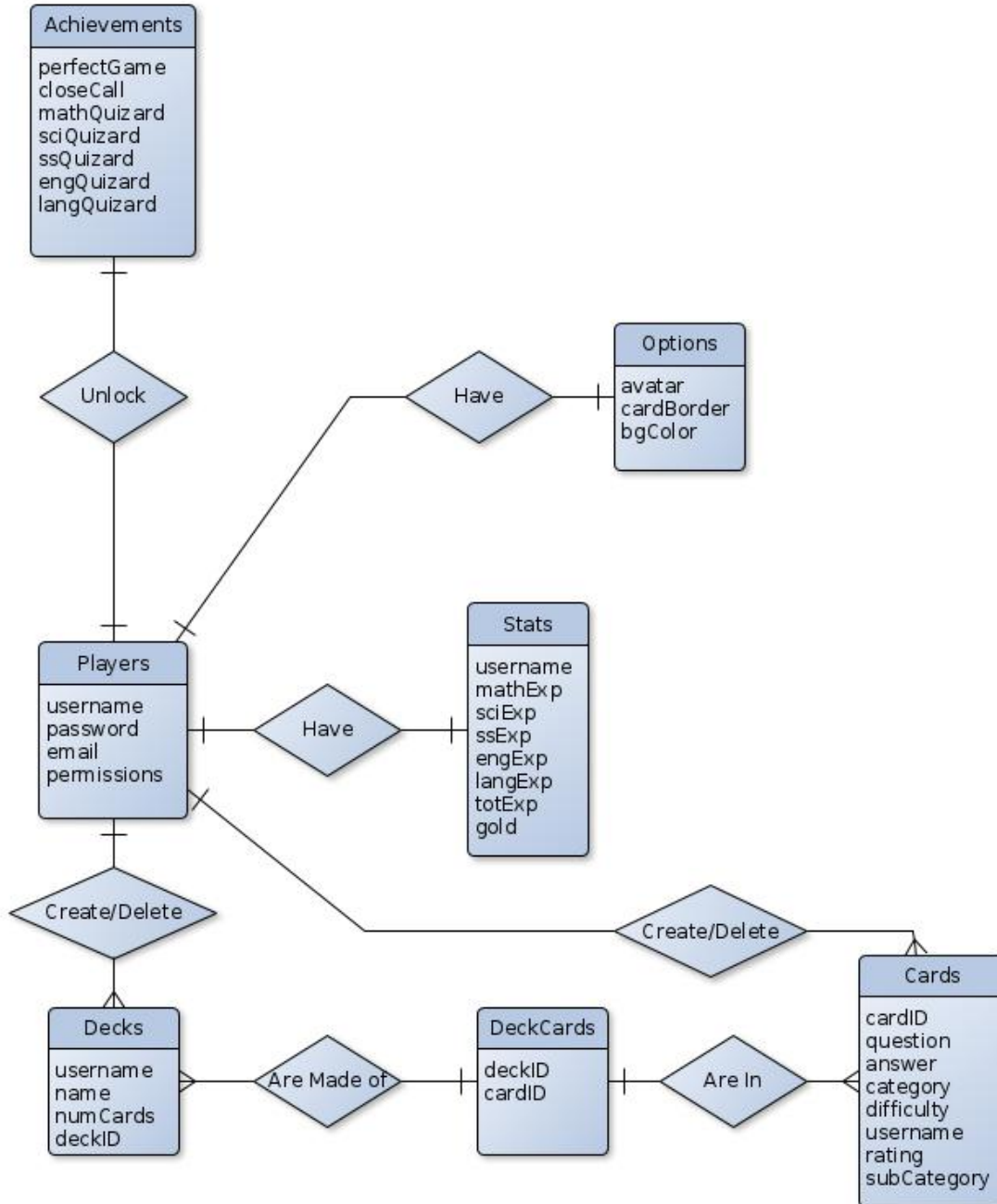- Share achievements with friends

Visitor:
- Register an account with the website

Administrator:
- View analytics of cards (Number of times used, number of times gotten correct, etc.)
- Create or delete any flashcards

Database Model:

Players -

username (varchar): The primary key for any player. Widely used as a foreign key throughout the database, and connects many of the other tables to the player. All usernames will be unique so that we can use it as a key instead of creating user id numbers.

password (varchar): The password for the player's account, required upon login. Will not be stored in plain text, and will instead be salted and hashed for security measures.

email (varchar): The email address for the player. Used to send updates, information, or other communications.

permissions (int): The permission level for the user. 0 is a default user, 1 is an admin. Dictates whether or not the user can perform certain admin-only actions.

Decks-

deckID (int): The primary key for the Decks table. A unique integer that represents a particular deck of cards. Uniqueness is determined simply by order of creation (First deck is 0, second is 1, third is 2, etc...).

username (varchar): The foreign key from the Players table. Used to show the decks that a particular player has created.

name (varchar): The name of the deck. Simply a way for a user to identify one deck from another. Created by the user upon deck creation.

Cards-

cardID (int): The primary key for the Cards table. A unique integer that represents a particular card that may or may not be in a deck. Once again, uniqueness is determined just by the order of creation.

username (varchar): The foreign key from the Players table. Used to show the cards that a particular player has created.

question (varchar): The question for the card, which will be asked during gameplay. Written by the user during card creation.

answer (varchar): The answer for the card, which will need to be entered during gameplay. This is also supplied by the user during card creation. The answer entered by the player will need to match this value.

category (int): The category of question that the card falls into. These are the global categories, such as math, science, english, social studies, world languages, etc. Because these

are created server side, a simple int will act as an enum in this case, and we'll save space this way.

subCategory (varchar): A tag added to a card by a user that indicates what subcategory it falls under, such as "Physics" or "Chemistry". These are user generated, so anything could be entered, such as the title of a book, name of the class, or some other grouping.

difficulty (int): An integer describing the difficulty of the question. With levels of Easy, Medium, and Hard mapped behind the scenes to 0, 1, or 2 respectively, the relative difficulty of a card can be entered by the user as part of the card information.

rating (int): The community's current rating for the card. The rating will be determined by a series of up and down votes. If a user finds a particular card to be good or helpful, he/she can upvote it and raise its rating by one point. If a card is unhelpful or ill-formed, he/she can downvote it to lower its rating by a single point. The ranking determines search results, where well formed cards are pushed to the top and unhelpful cards sink.

DeckCards-

deckID (int): The foreign key from the Decks table. A unique integer that represents a particular deck of cards. This key links a particular deck to a set of cards in this table.

cardID (int): The foreign key from the Cards table. A unique integer that represents a particular card that may or may not be in a deck. This key links a card to all of the decks it is currently in.

Options-

avatar (varchar): The url to the player's avatar image. The avatars will be preset, so all of the files will be already available on the server.

cardBorder (varchar): The url to the player's current card design. These will be preset as well, so no need to worry about uploading files.

bgColor(varchar): The selected background color for the player's menus. This is a standard html color value in hexadecimal, without any alpha.

Stats-

username (varchar): The foreign key from the Players table. Used to link the player to their statistics.

mathExp (int): An integer representing the experience earned from solving questions in the Math category.

sciExp (int): An integer representing the experience earned from solving questions in the Science category.

ssExp (int): An integer representing the experience earned from solving questions in the Social Studies category.

engExp (int): An integer representing the experience earned from solving questions in the English category.

langExp (int): An integer representing the experience earned from solving questions in the Languages category.

totExp (int): An integer representing the experience earned from solving questions in all categories. Simply the sum of all other categories of experience.

gold (int): An integer representing the amount of gold the player currently has. Used to purchase unlockables and other fun things.

Achievements-

perfectGame (int): A boolean value for the completion of the "Perfect Game" achievement. A perfect game is a game where no damage has been taken. A value of 0 means the player hasn't accomplished the goal, and a value of 1 means that the achievement has been unlocked.

closeCall (int): A boolean value for the completion of the "Close Call" achievement. This achievement is earned when a player finishes save-the-world mode with 30 seconds or less to spare. A value of 0 means the player hasn't accomplished the goal, and a value of 1 means that the achievement has been unlocked.

mathQuizard (int): A boolean value for the completion of the "Math Quizard" achievement. This achievement is earned when a player has gained a certain amount of experience in math. A value of 0 means the player hasn't accomplished the goal, and a value of 1 means that the achievement has been unlocked.

sciQuizard (int): A boolean value for the completion of the "Science Quizard" achievement. This achievement is earned when a player has gained a certain amount of experience in science. A value of 0 means the player hasn't accomplished the goal, and a value of 1 means that the achievement has been unlocked.

ssQuizard (int): A boolean value for the completion of the "Social Studies Quizard" achievement. This achievement is earned when a player has gained a certain amount of experience in social studies. A value of 0 means the player hasn't accomplished the goal, and a value of 1 means that the achievement has been unlocked.

engQuizard (int): A boolean value for the completion of the "English Quizard" achievement. This achievement is earned when a player has gained a certain amount of

experience in english. A value of 0 means the player hasn't accomplished the goal, and a value of 1 means that the achievement has been unlocked.

langQuizard (int): A boolean value for the completion of the "Language Quizard" achievement. This achievement is earned when a player has gained a certain amount of experience in foreign languages. A value of 0 means the player hasn't accomplished the goal, and a value of 1 means that the achievement has been unlocked.

Software Architecture Diagram:
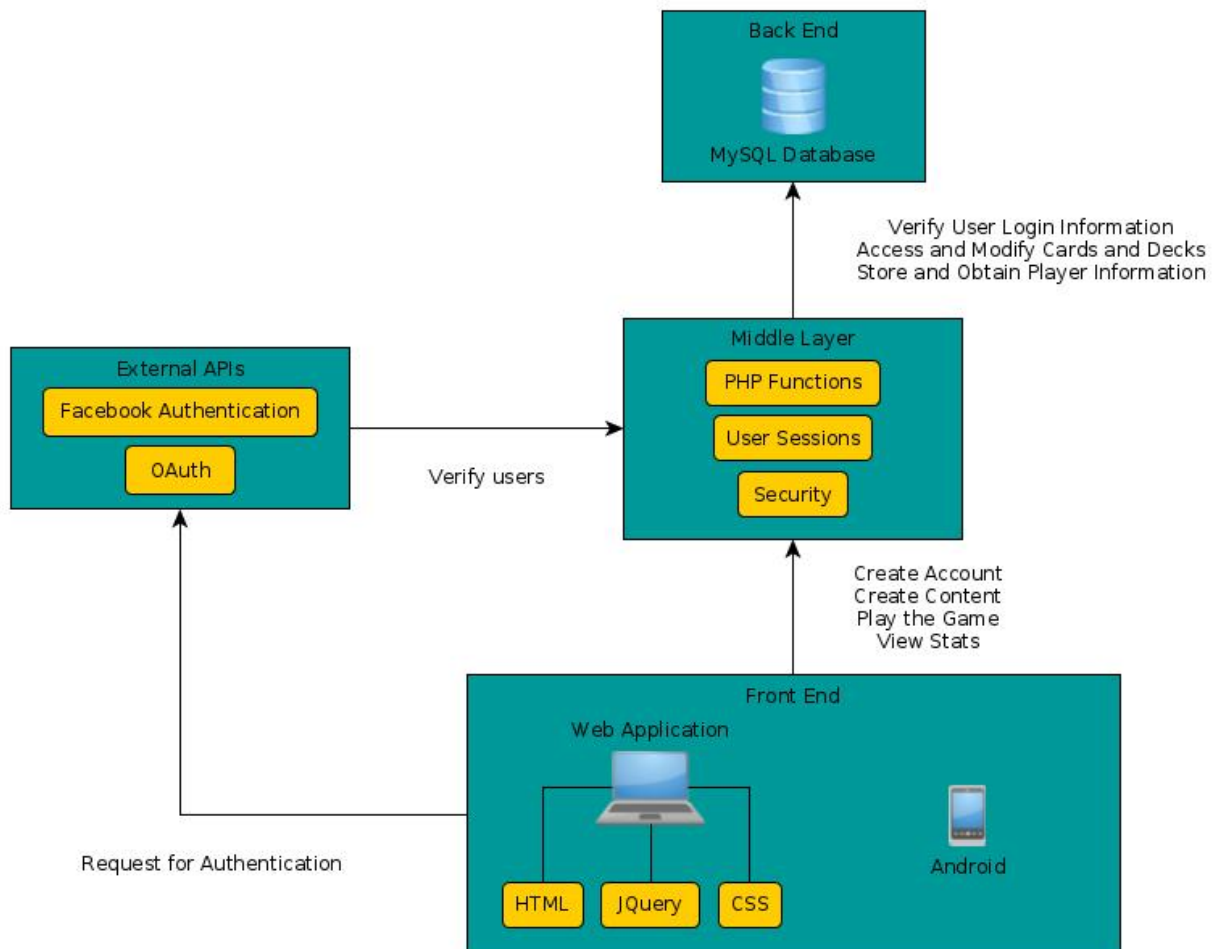
User Profiles:

Name	Sam	Amy	Theresa	Brett	Sue
Age	19	17	18	20	19
Education	College Freshman	Senior HS	College Sophomore	College Student	College Sophomore
Salary	NA	NA	NA	NA	NA
Computer UI Familiarity	High	High	High	Medium	Medium
Studying Enthusiasm	Medium	Medium	High	High	Low
Flashcard Enthusiasm	Medium	High	Medium	Medium - High	Medium
Online Game Enthusiasm	None	Low	High	Medium	Low
Job	Student	Student	Student/IP Clerk	Student	Student

Sam:

Avid student and volunteer, Sam rarely uses flash cards except when forced to by teachers. He feels like he is too busy for games, but the ability to track progress and compete with friends could very well draw him to a game like Quizard Quest. He's initially very skeptical about combining game features with studying, but the more he learned about it the more interested he became. He's still not sold on the idea, but he's willing to give a go when it becomes available.

Amy:

17 year old hardcore gamer and active community volunteer. Despite her lack of good will toward school, Amy makes extensive use of online study aids like Quizlet and has great enthusiasm in using them, but she dislikes study games and most online games. She prefers RPG shooters like Call of Duty: Modern Warfare. Her favored mode of studying is flashcards, but she doesn't believe anyone would be that interested in seeing her study habits or how successful she is at studying. "I've just never been super interested in games that are trying to teach me to learn. I like studying

information straight off of a sheet or flash cards or something of that sort." Thus, there is, for Amy, a sharp divide between games and studying. However, if the studying focus of the game is implemented well, she would certainly use it-just not as a game.

Theresa:

Theresa is new to Computer Science at Southern Methodist University and looking for some better ways to study. School and church fill up her schedule, so she has little time for most online activities like Facebook and gaming. Flash Cards and online study aids aren't her normal route, but something fresh and engaging would draw her in immediately. She's intrigued by the idea of tracking her progress and getting analytics back at the end of a quizzing session and believes it would be very effective at helping her be more satisfied with studying thereby increasing its effectiveness. Overall, Quizard Quest seems to be a winning concept to her.

Brett:

20 year old History Major at Southern Methodist University. Studies large portions for tests, quizzes, and likes to keep informed regarding the subjects he is learning. He does not often use online study aids, preferring to use books and notes to keep track of what he needs to know. He is not a stranger to online games, playing them during his free time. He is open to the idea of games being a tool for education, and could see himself using the Quizard Quest software as a way to practice and help with various Historical facts.

Sue:

Sue makes a lot of flash cards, the only problem is she doesn't use them afterwards. Something just in making them is sufficiently useful for her to study; the current study aids available to her don't really intrigue her much and games less so. However, the idea of competing and sharing with friends to include them in the studying and the added challenge of excelling above them intrigues her. She was initially reticent about Quizard Quest until she understood its focus on studying not gaming. The idea of competition is her main draw to the concept, but if she starts using it, her study habits may be changed forever.

Task Analysis:

Q1: How often do you study for classes?

Sam: Day or two before an exam

Amy: 5 days a week

Theresa: Right before the test.

Brett: Seven days a week

Sue: All the time. I study for all my classes.

Q2: How often do you use flashcards to study and for how long?

Sam: When it was required by the teacher in high school, never used outside of that

Amy: 5 days a week, at least 2 hours every one of those days

Theresa: Rarely do I use them – I used them a lot in high school

Brett: Varies, just for certain memorization of vocab.

Sue: I make flashcards and then I don't use them

Q3: Do you find flashcards to be beneficial to your studying?

Sam: Simply writing out the information is beneficial, studying by arranging flashcards and reading them is something I never do

Amy: Yes, very

Theresa: Most of the time…no.

Brett: Yes

Sue: Sometimes. It depends on if I try to use them or not.

Q4: Do you use any online study aids? If so, which ones?

Sam: I used to use Quizlet (quizlet.com), I do not currently use any.

Amy: Quizlet, Instantcert

Theresa: No

Brett: Just when I have to

Sue: Yes Quizlet

Q5: Do you find online study aids beneficial to your studying?

Sam: No

Amy: yes, I use them every day

Theresa: NA

Brett: It's alright, I prefer books

Sue: Yes

Q6: Would you be interested in an interactive, flashcard-adventure game?

Sam: It sounds nice, but I don't think it would work for me and a very busy schedule.

Amy: No

Theresa: Sure

Brett: Somewhat, I would rather make flashcards

Sue: No

Q7: What are you initial impressions concerning such a concept?

Sam: It doesn't seem helpful, it seems like a fun idea for younger kids

Amy: I am not usually intrigued by learning games due to their lack of originality. I think that if the game were able to capture one's attention like any normal computer/video game, it could be very beneficial.

Theresa: I'd like to know more – it has the word "adventure" in it so its got to be cool.

Brett: I would want to make them myself

Sue: Sounds boring and childish

Q8: Do you think tracking experience/success in individual subjects would help motivate you to study more?

Sam: Definitely, its hard to keep track of my progress in a class without a centralized grading system

Amy: Yes, seeing myself succeed would motivate me to continue growing in my knowledge.

Theresa: Yes, definitely. If I could have that kind of tracker when I'm studying now, I'd probably feel better about myself at the end of the day.

Brett: No

Sue: Yes! You get to compare your answers with others.

Q9: Would experience help you track your progress so as to help you measure your understanding in a subject and use your time more efficiently?

Sam: Same answer as question 8

Amy: Yes

Theresa: Yes

Brett: Yes

Sue: Sure

Q10: If you received achievements for completing quests, would you find studying more engaging?

Sam: I don't think so.

Amy: No

Theresa: Depends on what those achievements are…but probably yes – it'd be encouraging me to study.

Brett: Depends on the achievements.

Sue: Maybe, it does not motivate me strongly.

Q11: Likewise, if you received achievements for beating challenges, would you be more engaged?

Sam: Same as above.

Amy: No

Theresa: Yes

Brett: No

Sue: Maybe, again I feel skeptical about this idea.

Q12: Furthermore, if those achievements were displayed on Facebook where all of your friends could see them, would the ability to show everyone your skill and understanding in a subject increase your interest in studying?

Sam: Maybe a little, for example with DuoLingo I only somewhat enjoy boasting about my lingual progress. If all my friends were playing, however, it would be more enjoyable

Amy: No, I don't think many people have an interest in seeing what I have accomplished in a particular subject.

Theresa: No, I don't really post nor do I really like to post things on Facebook. Study achievements should be celebrated solo.

Brett: No

Sue: Maybe, a little. It is fun to compare your skills with others.

Q13: In Quizard Quest, you can earn gold by completing quests based on speed, accuracy, and difficulty. Do you think this would encourage you to study more and with greater benefits?

Sam: Its not about the game's stipulation, but more about your friend's expectations for motivation

Amy: No, virtual gold would most likely not motivate me to study more.

Theresa: Yes!

Brett: No

Sue: Not really, I am not about earning gold.

Q14: Additionally, you can use gold to customize the visual effects and appearance of the game (and possibly more in later additions)! Do you think this added bonus would keep you more engaged in your studying?

Sam: No, only improvements to character performance motivate me

Amy: No

Theresa: Yes. But monetary prizes would also be a bonus.
If you could "friend" people and then compare your scores with others…that'd also be really motivating to try and get more points

Brett: Yeah

Sue: I don't think so.

Q15: Quizard Quest has 3 modes of gameplay: Training, Quest, and Save the World. Training is like normal studying: No time limit and incorrect responses don't count against you. Quest mode is like doing homework: Correct answers matter, but there's no time limit. Save the World is a test: You have limited time and your answers matter. What are you impressions concerning this progression of modes of gameplay?

Sam: Training is fruitless, no motivation to do it. Just stick to point values pressuring

participants to perform. Self motivation doesn't work

Amy: I think the the guidelines that have been set for each mode have been well thought out.

Theresa: This is awesome.

Brett: Unless the game is super cool, I couldn't see myself playing it.

Sue: It makes sense.

Q16: To increase the stakes and make sure each mode is beneficial, you get varying amounts of awards for completing a mode. You also have to "buy-in" to Quest and Save the World using gold so that you have something to lose, but the bigger stake, the bigger the reward. Do you think this adds incentive to take studying seriously without compromising your interest level in using Quizard Quest?

Sam: Excellent strategy.

Amy: No, I do not think this adds incentive to take studying seriously.

Theresa: Yes. I like this idea.

Brett: It's kind of like a real test, which makes it more engaging.

Sue: Yes, it sounds interesting, if you are motivated by awards. Personally, I just study a little until I feel like I understand it. The main motivation for me would be to beat others.

Q17: Do you think it would help you study to use Quizard Quest based off what you know now?

Sam: Still don't trust it, I need to see that its not just a semi educational game that takes too much time

Amy: No, I prefer basic flashcard study.

Theresa: Definitely

Brett: Probably not

Sue: Yes, I think it could help study longer. But I am motivated to beat my friends not to reach gold.

Q18: If you don't use flash cards now, does this concept of a game intrigue you?

Sam: Still no

Amy: I use flash cards now. Games do not intrigue me.

Theresa: Rarely do I use flashcards, but something like Quizard where there are these incentives to study – I could see myself using it.

Brett: No

Sue: Sure!

Qn: What terminology is used when completing this task?
- stakes
- gold
- questions
- problems
- quests
- challenges
- achievement
- risk
- reward
- modes
- studying
- experience
- engaging
- accuracy
- time limit
- deck
- flashcard

Objects and Actions Analysis:

I.   Visual Concepts and Accessible Data: Brainstorming
- **A. Home Menu**
  - a. *Creating a new flashcard deck*
  - b. *Modifying an existing flashcard deck*
  - c. *Starting a Game*
  - d. *Viewing record of quests (total stats)*
  - e. *Posting achievements*
- **B. Start Game Menu**
  - a. *Selecting from existing flashcard deck(s)*
  - b. *Selecting a game mode*

    C. **In Game:**
- a. *Selecting an answer*
- b. *Moving to next challenge*

    D. **Pre Game:**
- a. *Show a list of existing flashcard decks before starting a mode*
- b. *Display only the option to create a new deck if no deck exists yet*
- c. *Users cannot start a mode if no decks exist*
- d. *Users can modify existing decks before starting a game*
- e. *Users must specify they want to begin a quest to use flashcards*
- f. *Users must specify at least one deck to be used after selecting to start a quest*
- g. *Users will be able to select/deselect decks after selecting to start a game*
- h. *Only the selected decks will be used during the game*
- i. *Users will be able to select which mode they will use*

    E. **In game:**
- a. *Users will be able to see a question from one of the selected flash cards along with its possible answers*
- b. *Users will select answer to flashcard from multiple choice options*
- c. *Users will be able to choose whether to continue after answering a question correctly*
- d. *Users will be able to exit a game*
- e. *Show game progress bar in all modes*
- f. *Show number of questions that can be answered incorrectly without failing only in Quest and Save the World modes*
- g. *Show timer only if using Save the World mode*

    F. **Post Game:**
- a. *Users will be able to view their stats after a game*
  - i. *See which they answered Correct/Incorrect*
  - ii. *See the correct answers for those answered incorrectly*
  - iii. *Duration Total*
  - iv. *Duration per card*
  - v. *Experience gained*
  - vi. *Show achievements only if any receive*
  - vii. *Show gold invested in game*
  - viii. *Show gold earned from game*
- b. *Allow users to exit to home menu*
- c. *Allow users to start a new game with existing deck(s)*
- d. *Allow users to share/post their stats*

II. User Accessible Options

    A. **Home Menu**
- a. *Contains*
  - i. *Profile Page*
  - ii. *Start Game Menu*

        b. *User Can Access*
-     i. *All*

B. Profile Page
- **a. *Contains***
  - i. *Username*
  - ii. *Avatar*
  - iii. *User Statistics*
  - iv. *Gold*
  - v. *Experience*
  - vi. *Achievements*
  - vii. *Flashcard Deck(s)*
  - viii. *Privacy*
  - ix. *Email Address*
  - x. *Password*
- **b. *Initialized By User***
  - i. *Username*
  - ii. *Avatar*
  - iii. *Email Address*
  - iv. *Password*
  - v. *privacy*
- **c. *Editable By User***
  - i. *Privacy*
  - ii. *Avatar*
  - iii. *Email Address*
  - iv. *Password*
  - v. *Existing Flashcard Decks*

C. Flashcard Deck
- **a. *Contains***
  - i. *Card(s)*
  - ii. *Subject Tag*
- **b. *Initialized By User***
  - i. *All*
- **c. *Editable By User (Before Game Starts)***
  - i. *All*

D. Flashcard
- **a. *Contains***
  - i. *Question*
  - ii. *Possible Responses*
  - iii. *Correct Answer*
  - iv. *Difficulty Tag*
- **b. *Initialized By User***
  - i. *All*
- **c. *Editable By User (Before Game Starts)***
  - i. *All*

E. **Start Game Menu**
   a. *Contains*
      i. *Modes*
      ii. *Flashcard Deck(s)*
   b. *User Can Access*
      i. *All*
F. **Modes**
   a. *Contains*
      i. *Training*
      ii. *Quest*
      iii. *Save the World*
   b. *User Can Select*
      i. *One out of All*
G. **Training**
   a. *Contains*
      i. *Card(s)*
      ii. *Monster/Challenger*
      iii. *Avatar*
      iv. *Status Bar*
      v. *Arena*
   b. *User can View*
      i. *Card*
         1. *Question*
         2. *Possible Responses*
      ii. *All others*
   c. *User can Select*
      i. *Card*
         1. *One of the Possible Responses*
H. **Quest**
   a. *Contains*
      i. *Card(s)*
      ii. *Monster/Challenger*
      iii. *Avatar*
      iv. *Status Bar*
      v. *Arena*
      vi. *Health*
   b. *User can View*
      i. *Card*
         1. *Question*
         2. *Possible Responses*
      ii. *All others*
   c. *User can Select*
      i. *Card*
         1. *One of the Possible Responses*
I. **Save the World**

      a. Contains
- *i. Card(s)*
- *ii. Monster/Challenger*
- *iii. Avatar*
- *iv. Status Bar*
- *v. Arena*
- *vi. Health*
- *vii. Timer*

      b. User can View
- *i. Card*
  - *1. Question*
  - *2. Possible Responses*
- *ii. All others*

      c. User can Select
- *i. Card*
  - *1. One of the Possible Responses*

J. Post Game Menu

      a. Contains
- *i. Username*
- *ii. Avatar*
- *iii. Game Analytics*
- *iv. Gold*
- *v. Experience*
- *vi. Achievements*
- *vii. Total Duration*
- *viii. Missed Questions*
- *ix. Correct Answers*
- *x. Timer Per Card*

      b. User Can View
- *i. All*

O/A Matrix:

https://docs.google.com/spreadsheet/ccc?key=0AhwJ5iw4sP1cdDVoNmtFU0t5dkZLdzFrVkxlMXFPc1E&usp=sharing

Paper Prototype:

1. http://lyle.smu.edu/~gcastillo/3345/PaperPrototype/

Usability Test Outline:

- The Usability Test consisted of the following:
    i. Explaining to the user how the website works
    ii. Showing the user the initial page before beginning a Game mode
    iii. Then asking the user if they would know what to do from here
    iv. After the user answers, They are asked to attempt to select a deck and begin the mode
    v. Once the user begins the mode, They are asked for feedback on the interface and process
    vi. Next they are explained what they are looking in the actual game mode and then they are asked if anything on the page looks confusing or unclear
    vii. Afterwards they are shown the results page and they are asked to explain what they see and if it makes sense to them.
    viii. After this I proceed to show them the create a deck feature
    ix. I take them to the main page for the create a page and ask if they understand the options just from seeing them
    x. Next I ask the user to create a card
    xi. Once the user clicks on the create a card I ask them to explain to me what they think they are seeing and what they think it does
    xii. I then ask for their feedback on the page
    xiii. Next we proceed to the create a deck page
    xiv. I ask the user to explain what they are seeing
    xv. Next I ask them to create a deck by describing to me how they would do it
    xvi. Next I ask for their feedback on the page

Usability Test Results:

Technical Levels:
1. **Low- Knows just enough about a computer to be able to work the minimum**
2. **Mid- Knows enough about computers and technology to be able to navigate and edit a computer**
3. **High- Computer expert, likely a programmer**
    1) Tester 1:
        a) Female
        b) Technical Level: low
        c) Results:
            i) User had trouble understanding the concept of the game modes, suggested having a brief description when each game mode was

selected

ii) User did not understand the experience and gold concept, suggested adding an info page or small texts to describe what it was for

iii) User said that in the add card interface she was confused as to where the card was being added to when she clicked "Add Card"

iv) User said the Deck create looked intuitive but needed a filter to sort cards and a checkout menu to confirm the cards being used to create the deck and go back and edit it before finalizing it

2) Tester 2:
   a) Male
   b) Technical Level: Mid
   c) Results:
      i) User suggested to have an explanation of each mode and what all the icons mean
      ii) User did not understand how to continue in the Training mode, it was not evident that submitting your answer made you proceed
      iii) User suggested making create a card and create a deck each their own page
      iv) User said that the add card button should be read differently because he could not tell if it meant add card to a deck or somewhere else
      v) Create a deck needed something to keep track of the cards you selected for the deck and suggested limiting the amount of cards displayed to only 25 at a time

3) Tester 3:
   a) Professor Raley
   b) Technical Level: High
   c) Results:
      i) immediately noticed the lack of a logout button
      ii) Needed some explanation on how the beginning screen worked and suggested for some statistics on previous attempts of some decks to be shown next to the deck name to help users remember if they already did well on a deck of cards
      iii) Pointed out that flash card maker was a bad name for the create a card and deck page, need to rename it
      iv) Suggested that we have a sidebar showing the cards we have selected in the create a deck
      v) Also suggested adding a filter to lower the amount of cards the user looks at when building the deck and categorize it by subject or most missed to help the user focus on troubled questions
      vi) Display all the cards with similar punctuation and case for uniformity

Lexicon:

Game: General term including all modes: Training, Quest, and Save the World
Arena: General term for the environment or background for each challenge in the game
Monster/Challenger: General terms for the avatars used to represent characters who are posing the questions to the user

In Relation to Studying Enthusiasm:

Low: Never study or hate doing it.
Medium: Study only right before a test or just aren't that interested in studying when they do study
High: Prolific studier, finds the task enjoyable and beneficial.

In Relation to Flashcard Enthusiasm:

Low: Never use, never want to use.
Medium: Either don't often use and like them or would like to use more.
High: Makes significant use of flashcards when studying, very interested in using them in the future as well.

In Relation to Online Game Enthusiasm:

Low: Never played online games, or rarely participates in them.
Medium: Familiar with online games, even if not often playing them.
High: Familiar and fond of online games, often playing them.

In Relation to Computer UI Familiarity:

Low: Often avoids exposure to computer user interfaces, lacks intuition to use many UIs without assistance, may not be able to retain experience without multiple exposures.
Medium: Just the happy middle of innate understand or UIs and annoyance at their existence.
High: Often makes use of computer user interfaces, possesses intuition to use most UIs without instruction, readily remembers how to use UIs after brief encounter.