Promoting Healthy Eating Habits Through *Monster Appetite*

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**Addressing the Problem**
The obesity epidemic is one of America’s largest public health challenges, one that creates disparities among race, ethnicity, region and income (Communities Putting Prevention to Work; Fund for Public Health in NY). Currently, there are over 12 million obese American children and adolescents (Trust for America’s Health, 2010). Intrigued by the increase in childhood obesity, many awareness movements have been ignited throughout the country including NYC mayor Bloomberg’s initiative to fight obesity through reducing the sizes of sugary drinks (The Bloomberg Administration, 2012). In light of efforts to combat the obesity epidemic, *Monster Appetite* (MA) is a game that potentially remediates some aspects of the concern by promoting awareness of the content of food consumed by children.

Through play, children learn about caloric amount in various food items that a child may select and intake daily. Through constant decision making and competitive game play, the hope is that children will start thinking more about their food choices with newly obtained information of the food items and be able to make informed decisions such as building healthier eating and exercise habits.

**Game Play**
Unlike most games that promote nutritional awareness by focusing on what is best based on nutritional values, MA employs reverse psychology and humor, where players can eventually learn about food calories and information but by selecting what they feel is the highest caloric meal and feed it to their monster avatar so that their monster avatar can grow to the next level. By playing the game multiple times, players will eventually have a greater knowledge and information of which food items contain the least to the most calories as it becomes advantageous for their game play.

**Design and Mechanics of Prototype Game**
In designing MA first as a paper-based prototype (see Figure 1), and subsequently as a digital based prototype (see Figure 2), the most critical aspect considered was the player’s overall game experience and how the game play can promote awareness and information of food choices. In order to expose players to as many different foods as possible, the game involves players selecting three meals a day in a span of seven days per round. The food items have been selected based on what school aged children are most likely to select to eat, where multiple grocery choices can have large variation on calories and have the high risk of causing obesity (Zinczenko & Goulding, 2008). The mechanic of selecting a meal is a fast action activity where each player rapidly selects the meal card based on a quick glance at a picture of an item. In addition to meal cards, game tokens can impact the player negatively or positively: for example, doing yoga causes a player’s monster to lose calories, but a late night snack card gives a monster additional calories for the total daily intake, which will help the player’s monster grow more rapidly. These effects of the tokens are based off real research of exercise and behavioral habits (Costikyan, 2006).

**Concerns**
As the foods in the game are chosen from commercially available items, there is a concern of regulations and copyright issues of the companies that produced the food items.

**Initial Testing & Improvements**
Creators of this game conducted three rounds of initial testing with students from elementary up to high school of 20 participants. The first round of testing (see Figure 3) did not include a pre and post-questionnaire, but the second and third round of testing included both pre and post-questionnaires. The results from the questionnaires were positive with criticism mostly focusing on technical improvement regarding the game mechanics such as having clearer instructions for the chance tokens, including different kinds of food items, incorporating other nutritional facts besides calories, creating different versions of the game with different levels, etc. The creators are currently reviewing all of the feedback and suggestions as they consider creating a more complete digital version of the game. Currently, only a single-player Flash-based digital game is available besides the original board game. The creators plan to expand the single-player Flash-based version into a more mobile adaptable version such as Android and iOS.
Uniqueness
The creators of this mobile game believe that a game approach for learning is appropriate in the intensely techno-centric world where 21st century skills are emphasized, but are not supported enough in academic and educational settings. The creators hope that the game can be available to all students in the U.S. and that it will help them make healthier dietary decisions.

Why Mobile Technology?
Built in barcode and QR code scanner: Single player mode allows players to scan food items they see in stores by photographing their QR or Universal Product Code with their mobile device. These items scanned can also become part of a players 'virtual deck' giving them an advantage over players who have never seen those foods before because the player has a chance to memorize food content knowledge. Items not in the database can be submitted and verified on a back-end server, allowing for a richer gameplay and constantly appearing new 'cards.'

Geo-location & social-networking capability: Players can check in to a supermarket or restaurant that partnered with MA to download additional/seasonal card decks (i.e., Halloween candies, Thanksgiving foods, Christmas dessert items, etc.). Players can easily exchange/swap/share card decks with their friends who are also playing the game, which can increase social interaction. In addition, items put in shopping carts can provide user location of stores that carry certain products and provide valuable information to stakeholders such as food companies and supermarkets on purchasing trends.

Space and learning constraints: Tablets and mobile phones would allow the game to be played on the go, or in any area where setting up boards and cards would be inefficient. Technical devices simplify the gameplay allowing the players' focus to be more on the learning content, while allowing richer animations and sounds, which can engage the viewer.

Funding: Mobile devices could feature advertisements helping to fund development or allow for a free version across public schools and educational institutions. Gameplay can be briefly interrupted from time to time with an advertisement for a healthier snack (e.g., “Try PopCorners popcorn chips, available at ____”). MA can use cache GPS data to find retailer near the player.