NUTRIOPIA: DESIGN DOCUMENT

Nutriopia, Design Document for the Cognitive Science Class and Educational Technology,

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I. Analysis

Background and problem description

Food is a basic human need. Food and nutrition are linked to wellness and disease prevention (i.e. diabetes, heart disease, obesity and other eating disorders, etc.) Adequate nutrition contributes to longevity and to quality of life.

(The University of the State of New York, The State Education Department, Office of Curriculum and Instructional Support Albany, New York 12234 (2008), Food and Nutrition. Retrieved from http://www.nylearns.org/module/standards/downloadpdfs.asp)

Citing Keon (1997), Anderson et al. (2001) posit that nutrition education is an important step in fostering healthy eating habits which then lead to the prevention of illnesses such as those mentioned above (heart disease, cancer, diabetes, high blood pressure etc.). Further, nutrition education in children and teens can positively affect their health as adults by leading them to make healthy choices (Petersen et al.,1994 in Andersen et al., 2001). In America, "thin is considered healthy" (Ryan, 1995 in Andersen et al., 2001) and this portrayal by the media and by peer groups has an effect on how adolescents and teens view their health. There is a disconnect between the reality of what it means to be healthy and what they consider to be the picture of health. *Nutriopia* will bridge that gap by providing learners with a realistic picture of how food affects the human body and what a healthy body is.

According to Mayer and Anderson (1991), students learn better through animation. This hypothesis is supported by dual-coding theory (Paivo,1990, in Mayer and Anderson, 1991) which states that learners make both "representational" and "referential connections" between verbal and visual information. Using a simulation for nutrition education will then essentially allow learners to make the connection between food and the effect of the food on their bodies. Mayer and Anderson (1991)

further state that, “a major goal of science is to provide explanations for how various physical, biological, and social systems work.”

With *Nutriopia* we approach nutrition education keeping in mind the dual-coding theory hypothesis as well as Mayer’s Cognitive Theory of Multimedia Learning, Cognitive Load Theory and Cognitive Affective Theory of Learning with Media.

Through the use of an animated simulation, *Nutriopia* will allow students to understand the chemical and organic properties of food as well as the biochemical processes that take place in the body during digestion. They will further be able to understand how these biochemical processes and biochemical properties of food affect their body. In the long-term, the product aims to also get children thinking about healthy eating but it is not the primary focus of our product.

Target audience

Primary audience: Teenagers between the ages of 13-15 in the U.S.A. who own or have access to computers and/or smart phones. The socioeconomic level we are targeting are lower middle class to upper class/wealthy.

Secondary audience: General public, preteens, researchers, students of nutrition.

Review of competing (existing) projects and their shortcomings

Yucky Stuff:

http://yucky.discovery.com/flash/body/yuckystuff/breath/js.index.html#:

Made by *Discovery Kids*, this site for tweens, that can reach the teen audience as well, claims to be “the yuckiest website on the Internet”. In relation to the present project, the goal of the section *Gross & Cool Body* is that kids learn about some reactions of the human

body in a funny way: “the gross and cool stuff humans' bodies create--burps, snores, gas and more”.

Pros:

- Entertaining, engaging, fun.
- Attractive content and graphic design.
- Interesting and appealing information.

Cons:

- Some resources like the quantity of boxes where the content is presented in here might split kids’ attention.
- Most of the information is presented as written text, which can have a repercussion like the modality effect.

Mission Nutrition:

http://kidshealth.org/kid/games/mission_nutrition.html#cat122

Mission Nutrition is an interesting, interactive game that helps kids identify which foods contain which nutrients. When the game loads, players are in a kitchen with a fridge and various cabinets which they can click on to open and find foods. They are prompted to answer questions about nutrition by clicking on the food which contains a particular nutrient.

Pros:

- The graphics are simple, colorful and engaging.
- The game opens in any Internet browser and requires no special plug-ins or downloads. This makes it easy to access by a wide variety of players.

- The game play is simple point and click. Players simply click a food to answer the question.
- Players learn through discovery but guidance is provided. Firstly, learners are prompted to perform an action via text. Eg: “Open the fridge and find the drink that contains the most added sugar.” When the user clicks the fridge to open it, s/he can click on any of the foods inside the fridge to answer the question. Secondly, guidance is provided for both correct and incorrect answers which assists in schema building.

  Cons:

- It is possible to give the right answer and still continue to try to answer the same question by clicking on different foods. This can be confusing since, in the case of this game, there is only *one* answer to a question.
- It is possible to keep giving the wrong answer over and over again without the program telling you the correct answer. It would be beneficial if the ability to click on items that have already been clicked upon is disabled.
- Part 2 of the question appears in the same box as the feedback for the correct answer. This is done because Part 2 is an addendum to Part 1. However, it is possible that a player would gloss over the question and close the fridge thereby moving on to the next question.
- This brings us to the issue that a player can also close part 2 of the question without answering it and can still move on to the next question.

- Information about items is not readily available prior to clicking on it to answer a question. Items should have a text pop up or a voice over with the item's name when mouse hovers over.
- The product is aimed at children and there is no similar game based on nutrition for teens.

Zygote Body Experiment:

http://zygotebody.com

This is a very impressive interactive tool to learn about the body. First dubbed Google Body, Zygote Body allows the user to learn everything about the anatomical structure of the human body with a 3D model that is completely interactive.

Pros:

- The user can rotate the model, zoom in and out, giving the user freedom to explore and manipulate the learning environment.
- When the user clicks on the various parts it returns the name of the body part and other related information giving the learner instant access to anatomical data.
- It gives the user the choice to explore between a male and a female body and show the are differences in glands and reproductive systems.
- It provides all biological systems between the nervous, skeletal, muscular, digestive and circulatory are accessible and labeled.
- It is a fully-exploratory environment with information delivered in an effective way for learning as it addresses many of the cognitive load challenges and it uses many

of the principles effective for learning such Modality, Multimedia, Contiguity, Interactivity and Signaling.

Cons:

- There is no Application Programming Interface (API) available where we could access the multiple body parts using our custom programs that could enable the integration of nutritional information and create even richer simulation experiences..
- It only works in Google Chrome browser or where there is WebGL available
- It doesn't work on iPads nor Android mobiles.
- It is a fully-exploratory environment with information but no guidance.

Media Selection: Why is your form of delivery effective?

Learners in the age range of the target audience are inclined to use mobile and computers to gather their information. "Like all groups, teens use the mobile telephone to coordinate, and they use it as a way to provide a sense of security. Its use as a type of lifeline and its use in the coordination of everyday life are nothing if not functional and instrumental." (Rich, 2004)

In addition, the delivery of this information through a website increases engagement through the interactive tools that it contains (Mayer, 2005).

Nutriopia is a cloud based service that will enable us to centralize the information and have it accessible worldwide and cross-platform.

The front end and back end development will be deployed using the LAMP (Linux, Apache, MySql, PHP) environment and will be a cloud service that will be first deployed

on web browsers, allowing learners to view their nutritional discoveries inside the learning environment. Additionally, given both the financial opportunity and time, *Nutriopia* will be available on mobile apps.

The reasons behind making this product as a cloud based service is because of the world wide accessibility across country and platform boundaries, also because it gives us the opportunity to build upon it from a scalable version where users will be able to participate in a membership based system.

II. Design

Learner characteristics

Even though teens know about healthy versus unhealthy food, they have poor dietary habits. Teens are susceptible to peer pressure; natural tendency to eat junk food, skip breakfast; are extremely tech savvy, know how to find information online, have more control over their nutrition and possess the ability to distinguish between hunger and satiety and have the tendency to pick up harmful habits (smoking, drinking). (Story, Lytle, Birnbaum, Perry, 2002).

In terms of personal development and social skills, our target audience is able to, and are sharpening, their abilities to: manage their own lives and social relationships, communicate effectively, able to manage stress, make decisions, plan goals and advocate for themselves and others ("A guidance document," 2005).

In relation to cognitive abilities, Piaget's States of Cognitive Development posits that teens are at the fourth and final state: the formal operational period. This phase, which follows the Concrete Operational stage, commences at around 11 years of age (puberty) and

continues into adulthood. At this stage, individuals move beyond concrete experiences and begin to think abstractly, reason logically and draw conclusions from the information available, as well as apply all these processes to hypothetical situations. This is thinking like scientists, according to Piaget and therefore teens begin to consider possible outcomes and consequences of actions.

"[...] the ability to imagine possibilities above and beyond current reality is characteristic of formal operational reasoners." (Discroll, 2005, p. 198). "This leads, at least some of them, to think about alternative organizations of the world and about deep questions concerning the nature of existence, truth, justice, and morality" (Siegler, 1986, p.41 as cited in Driscoll, 2005, p. 198)

During this stage, the adolescent is able to understand values. "Begins to entertain possibilities for the future and is fascinated with what they can be. Adolescents are changing cognitively also by the way that they think about social matters. Egocentrism governs the way that adolescents think about social matters and is the heightened self-consciousness in them as they are which is reflected in their sense of personal uniqueness and invincibility" (Santrock, 2008). The former permeates many aspects of their lives, even the way they perceive health and nutrition. Teens at this age have high level of language development, reading and visual literacy.

Their cognitive processing styles–preferred and most effective are multimedia learning, discovery learning, hands-on and interactive. However their cognitive and learning strategies at this point are suggested by the school system: summaries, memorizing, elaboration.

Prior Knowledge:At this point, young people have advanced knowledge of the world, are experts in things they are interested in, have a value base and can choose to apply or not apply these values to their lives.

In terms of nutrition, their prior knowledge is broad. They know which foods are healthy and which foods are unhealthy. Eg: they know that soda is bad.

The nine Functional Knowledge areas of the Guidance Document for Achieving the New York State Standards in Health Education take the place of the eleven content areas from the New York State Health Education Syllabus and the Health Education Resource Guide. Functional Knowledge is content specific health knowledge that is essential for young people to know in order to be safe, healthy and succeed academically. The Functional Knowledge areas mentioned above are based on the priority health-risk behaviors for youth as identified by the Centers for Disease Control, New York State Health Education Mandates, NYS Commissioner's Regulations, health and education peer reviewed research and evaluation literature and scientifically research-based programs and curricula.

Affective Characteristics

- Interests: Teenagers do not think deeply about food or what they eat (Tacken, 2011).
- But they are extremely self-conscious at this age, they are interested in being "fashionably thin" as girls while boys are interested in achieving a "mesomorphic ideal" both of which can lead to nutritional deficiencies if unchecked. (O'Dea, 1995).
- Instruction that is based on analyzing recent food choices and the overall effect on health can be useful in promoting healthy choices. (Anderson, Stanberry, Blackwell, & Davidson, 2001) Although they are not interested in food, they are interested in

the effect that food has on their bodies and our product aims to inform teenagers about the effect that the food they consume has on their body in terms of growth, chemical breakdown and biological processing.

• Motivation: According to Cognitive Evaluation Theory, typically, teenagers are intrinsically motivated. They are also motivated by peer pressure, a sense of affiliation/belonging, and identifying/relating to a problem/situation.

• Motivations to learn: Curiosity, interest, whether or not they think they will be good at something (self-efficacy), relevance to their lives, satisfaction. (Driscoll, 2005)

• Attitude toward subject matter: Teenagers are interested in their appearance. They are well informed about nutrition and good health but do not transfer knowledge well to their daily lives citing obstacles such as “lack of time, lack of discipline and lack of a sense of urgency.” (Story, Resnick, 1986)

• Attitude toward learning: Teenagers want to learn about things they are interested in and things that apply directly to their lives. In terms of nutrition education, they prefer learning through the use of food wheels which clarifies portion size, dietary goals, where value of nutrients is clearly differences (Eg: fat vs cholesterol), use of images/photographs (Achterberg, Trenkner,1991)

• Perceptions of and experience with specific forms of mediation: N/A

• Academic self-concept: Teens believe they know about the importance of nutrition and that they understand the value of one food over another. (Story, Lytle, Birnbaum, Perry, 2002) Teens are also extremely susceptible to low self-esteem and poor self-concept which some researchers allege is a direct result of the tumultuous

teenage years. At this age hormonal imbalances as well as social and academic transitions place a burden on teens which they are not quite equipped to cope with. (O'Dea, 1995)

• Anxiety level: Teens whose body image does not correspond with their ideal body image experience high levels of anxiety which can lead to eating disorders or mental stress and depressive conditions. They also experience depression, hopelessness, loneliness, are less likely to be social or have friends and more likely to attempt suicide. (Falkner, Neumark-Sztainer, Story, Jeffery, Beuhring, Resnick, 2001)

• Beliefs: Teens' belief systems are influenced by their community, culture and public at large and specifically by family members, peers, media and social networks. (Anderson, Stanberry, Blackwell, Davidson, C., 2001) Teens generally believe that they eat well and/or that the food they eat will have no adverse effect on their health. While they are aware of the importance of eating healthy, they believe that it is something they can focus on later, do not have time for or that it is too difficult and complicated to do so. (Story, Resnick, 1986)

• Attribution of success, i.e., locus of control: In general, teens do not believe they have much control over their bodies or diets citing reasons such as lack of time, expenses involved in procuring healthy food, lack of motivation or knowledge of how to prepare healthy meals, convenience of fast foods and lack of set mealtimes with family. (Story, Resnick, 1986)

Social characteristics

• Relationships to peers: Teens are highly influenced by their peers. They turn towards social groups composed of their peer for support, validation and identity. (Story, Lytle, Birnbaum, Perry, 2002).

• Feelings toward authority: At this stage, their cognitive abilities are evolving and they are more likely to question authority and move away from the influence of authority figures such as parents, educators and the law. (Story, Lytle, Birnbaum, Perry, 2002).

• Tendencies toward cooperation or competition: According to Piaget's Theory of Child Development, children begin to understand the concept of 'cooperation' at around 10 years of age and as they grow older further deepen their understanding to include "ideal reciprocity".

• Moral development: According to Kohlberg (1958), by early adolescence, children's moral development is at a stage he called 'Conventional Morality'. At this stage, their morals are influenced by social norms, peer pressure and the desire to be viewed in a favorable light. (Crain, 1985).

• Socio-economic background: Socioeconomic status plays a huge role in nutritional awareness. Generally, those from lower socioeconomic households show lower knowledge of nutrition when compared with those from higher socioeconomic houses. (Fahlman,, McCaughtry, N., Martin, J., Shen, B., 2010).

• Racial/ethnic background, affiliations: African-American teens from low-income households tend to display less knowledge about nutrition than their counterparts. (Fahlman, McCaughtry, Martin, Shen, 2010)

• Role models: Teens are resistant to instruction presented from authority figures and are more reliant on their peers. Citing Bandura (1975), Anderson, Stanberry et al (2001), posit that teens also idolize those who they believe are leaders. They usually include celebrities, sports persons and others in strong roles of popularity and/or wealth.

Design Implications

The implications of the target audience's learning characteristics for the design are:

1) Intuitive interface i.e. Search bar

2) Use of meaningful information that amuses audience in the age range 13-15 years old, related with their personal habits.

3) Guidance using a tour tool.

4) Worked examples in the ideal breakfast.

Content analysis: What's being taught.

In *Nutriopia*, we are targeting three broad educational areas: nutrition, chemistry and biology.

Nutrition: *Nutriopia* teaches teens that the key to good health is good nutrition. As Story, Lytle et al (2002) point out, nutrition education amongst teens is important because to ensure that they will grow into healthy adults and pass on healthy nutritional behaviours to future generations. By using *Nutriopia,* teens will be able to make connections between the foods they eat every day and their overall health and fitness. It will also educate users on

the relationship between energy requirements and caloric intake, how age, lifestyle, personal habits and physical activity affect weight and health management, understand the importance of a balanced meal, understand the how food affects the human body and acquire the ability to identify and select foods based on information that is available on food labels.

Chemistry: In terms of chemistry education, teens will learn about the chemical properties of foods and use their knowledge of the periodic table to integrate their understanding of chemistry with that of nutrition. Through infographic representation, they will learn about the main chemical components of food and how these chemicals are broken down and distributed throughout the body. This graphic will educate teens on the healthy and harmful properties of the chemicals. It will help teens draw a link between the abstract idea of 'chemicals' (which they can't see) and food (which they can see, touch, feel and consume). In effect, they will look at a banana and be able to understand that it contains Potassium (K), a chemical, which can be good for their blood pressure, kidneys and heart. They will learn, also, about the components of food that are organic and those that are synthetic. This is important because it will help them identify synthetic or harmful organic ingredients in processed and non-processed foods. The goal here is to teach teens to look for these ingredients and minimize, if not eliminate, such foods from their daily diets.

Biology: In terms of biology education, *Nutriopia* will help answer the question, "What happens to the food after it enters my body?" Users will learn how the human body breaks food down at a molecular level. Through the use of simulation, teens will learns which organs or systems in the human body (circulatory, digestive, skeletal, muscular, and nervous systems) are most affected by these chemicals that are found in the food (eg: K,

Na, Mg etc). Users will also understand the role of geographic and climatic conditions on the body's ability to absorb nutrients. For example, seasonal vegetables are better for the human body than foods are not native or not in season. They will also learn about levels of energy and how different foods can give them varying levels of energy. *Nutriopia* will also assist users in understand how artificial substances can affect their bodies in adverse ways, how certains foods promote certain illnesses and conditions in the human body and finally, how food can affect health both positively and negatively.

Goal and Objectives:

Nutriopia is directed at teenagers on the brink of exercising autonomy over their food choices. The product aims to educate teens about the effect that food has on their body. The interface focuses on biochemical processes of the body during digestion, how food is broken down into its most basic components at the molecular level and how combinations of foods that are consumed as a meal effect the human body. Using Bloom's Taxonomy (Bloom, 1956), we have discerned five major goals and objects of *Nutriopia*:

a) Knowledge: To be able to identify and recognize healthy nutritional items. Learn about the information on nutrition labels and be able to recall elements in the periodic table that are present in everyday foods.

b) Comprehension: To understand the correlation between nutrition and health and understand how food breaks down in the human body.

c) Application: Distinguishes between healthy and unhealthy nutritional choices. Demonstrates the ability to make healthy choices in two ways: 1) by choosing healthy

foods in their own lives which can be tracked in their food journal. This skill can be measured by the way in which learners manipulate the simulation.

d) Analysis: Is able to discern patterns from data available in their food journals and via graph to organize information that reflects how their food choices have affected their own bodies.

e) Synthesis: By learning how food affects the body, in terms of biology and chemistry, learners should demonstrate the ability to evaluate different foods in order to build a more effective and balanced meal.

Description of delivery platform (required hardware and software)

The user's computer must have at least the following requirements:

Windows XP or newer. Mac OS 10.0 or newer

Internet Browser: Google Chrome, Firefox Mozilla, Safari or Mobile Web Kit browser.

Speakers

Keyboard/Mouse or Touch screen

High Speed Internet Connection

It is a cloud based service because otherwise download all the data would use a lot of space.

The learners must be proficient using a computer and/or a mobile device, keyboard and computer mouse, as well as intuitive touch gestures such as swiping, pinch and tap.

Learners must be able to navigate the web and know how to search and retrieve information from databases using a simple text input tool, such as those commonly used by major search engines such as Google, Bing and Yahoo!

The project would be viewable in all platforms that have an Internet connection and advanced web browsers such as Google Chrome, Firefox Mozilla, Safari and the WebKit standard mobile/smartPhone browsers such as those packaged in the iPhone, iPad, iPod Touch and the Google Android OS based mobiles and tablet devices.

The application requires the user to be connected to the Internet, because all the resources are served in real time from the cloud due to the extensive amount of data required to simulate the learning procedure, to populate the nutritional catalog and to access the registered user accounts and allow the to use the social sharing tools.

For DEMO only, the user will need Flash Player.

III. Project Description

Narrative of project design and activities: presentation, interaction

The *Nutriopia* Project consists of a web interface where the learner will be able simulate the intake of food and nutrients into the human body. For *Nutriopia* to be effective, the project will consists of an extensive database containing food items, such as vegetables, fruits, grains, proteins and carbohydrates in the form of organic foods as well as processed food.

The data will be in a centralized database with the list of:

1) Food items, sorted by popularity among the target audience (kids between 13 and 15)

2) A list of all possible nutrients that the human body needs to nourish itself, such as potassium, sodium, carbon, simple sugars, etc.

3) A relationship or associative list where we match the foods with their nutritional facts and their percentage value, that is how much potassium there is in a banana.

The users will be able to share these details with their friends through social media.

In addition, the program will present the abilities for the users to be able to learn from their own nutritional data, as they will be allowed to keep a nutritional journal online that they can use to monitor their health as well share it with the friends and family and/or their online communities by creating an account using the most used social networks and services to sign in: Facebook, Twitter and/or Google accounts (Warren, 2010). These components will aid the user to keep a balanced diet and to offer them with nutritional suggestions, recipes and health facts with the purpose of creating an engaging platform component that allows them to learn additional information about the food they eat. E.g.: A pomegranate can have the same effect as an aspirin.

The user will also have the option to view a simulated animation of the meal they entered to the system using the search tool and by clicking the "SIMULATE" button. In addition, they will be able to move from novice to expert mode by turning the "LABELS" feature "ON" and "OFF", which contains information about the food and the organs+food interactions involved in the meal the user has entered. Furthermore, if the users need guidance for using the interface they can choose to take an interactive tour by clicking on the "TAKE TOUR" feature located to the bottom left.

General User Experience:

When the user enters www.nutriopia.com, s/he is presented with a search box and the question prompt- "What did you eat for your last meal?" The user will then type in the foods s/he ate; each food can be separated by a comma and then they will hit the 'Digest' button. Once the 'Digest' button is hit, the user will be taken to the simulation page which shows the user the human body and an infographic that breaks down the chemical and organic properties of the food s/he put in the search box. At this point, the user can click on the 'Simulate' button to see a visualization of how the foods break down in the human body and which parts of his/her body are affected by the nutrients. For more information on the nutrients, the user can click on the nutrient infographic on the top right hand corner of the screen. This will take them to a page where they will learn in detail about the properties of the particular nutrient.

In the segment below, we will go into a hypothetical scenario based on personas for a more specific picture of how a user might experience *Nutriopia*.

Personas and scenarios-- Nutriopia in action:

Persona 1: Sabrina is a 14 year old. She wakes up at seven every morning. She eats breakfast at 7:30 a.m. Breakfast is usually cereal with milk and banana. Her dad drives her to school, and on the road she uses her mobile phone to text friends and see what happened last night on Facebook. She also opens *Nutriopia* app to type what she just ate: cereal (brand), whole milk, banana. She see how the food is broken and she looks at her energy levels: Cool! She says. Finally she saves it to her journal and logs off. Time to go off the car!

She has (#) classes and then a recess. She goes to the school cafeteria and wants to eat a slice of pizza and orange juice. Before she decides on this meal, she uses her mobile phone, opens *Nutriopia* app to type in: cheese pizza, orange juice. She watches a simulation of how the food breaks down and... Oh no! High levels of gas with that combination. "Really?" she thinks. "But it is just a slice of bread with tomato sauce and...cheese." She clicks on 'cheese' to go to the catalogue and she realizes now: processed cheese has a lot of lactose and complex elements. But that's not all, apparently cheese is only one gassy element, bread has a substance that produces gas as well.

"OK. Pizza is not the best combination. I still have 4 classes," Sabrina thinks. "Let's see what's a better choice."

She clicks on *Nutriopia*'s catalogue and searches for new options such as: wheat bread sandwich with lettuce, turkey breast ham, slice of cheese and tomato. Nice choice! Apparently the gas levels are low and the energy levels remain good.

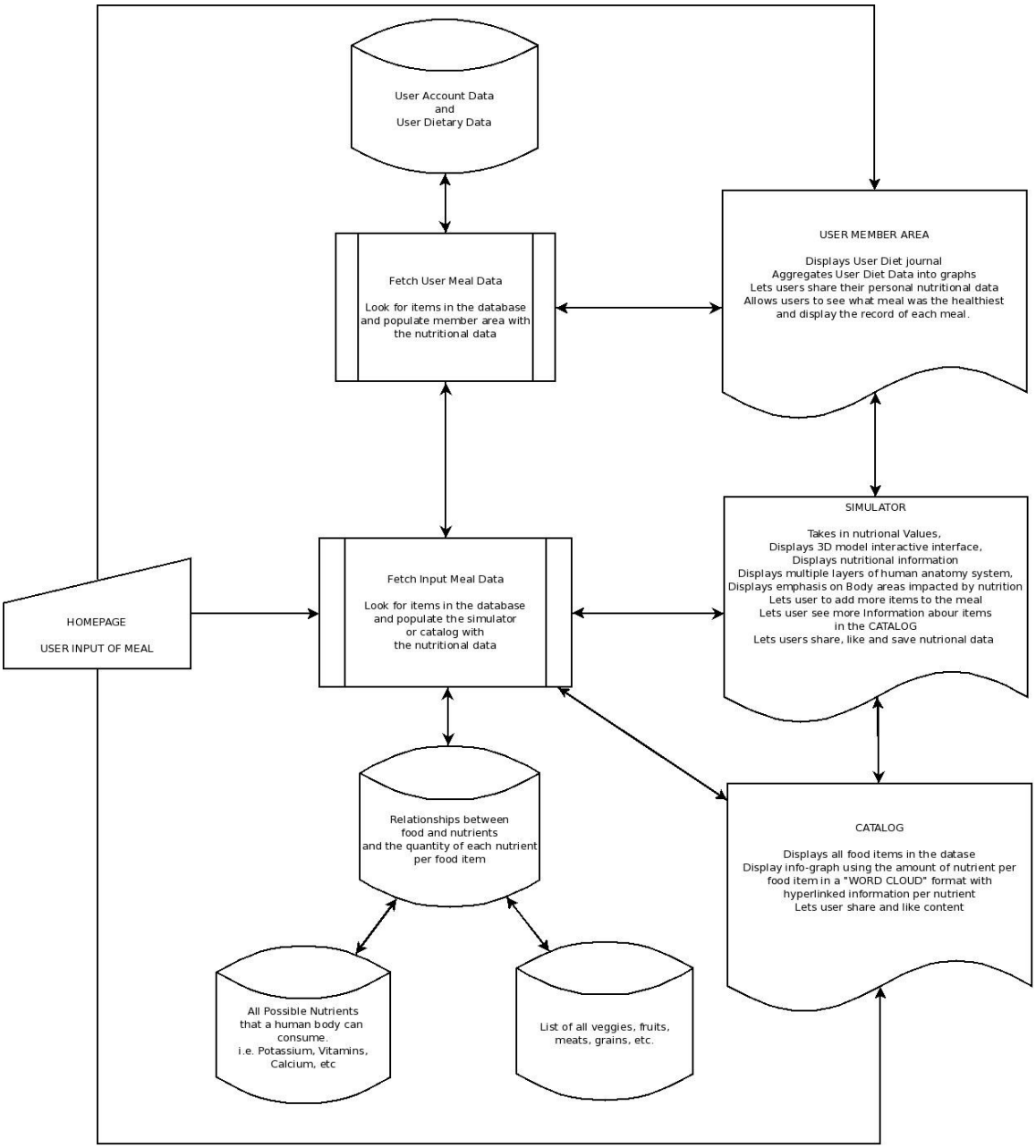
Persona 2: Will is a 15 year old student. After class he goes home, but there is nothing to eat. So he goes out and buys a McDonald's meal. He eats a hamburger, french fries with ketchup and a coke.

After that he has to do homework. He uses his laptop to do that. He starts writing a paper, but he feels so sleepy. Then, he remembers: *Nutriopia*! "Yes, Nutriopia may tell me why am I so sleepy." He uses Google Chrome to go in to the website: www.nutriopia.com In the first screen he types the meal (*Nutriopia* has all the meals from Mc Donald's and other food chains) and sees the simulation: His body needs a lot of energy to process that many complex elements. But he thought the coke would give him enough energy to do his

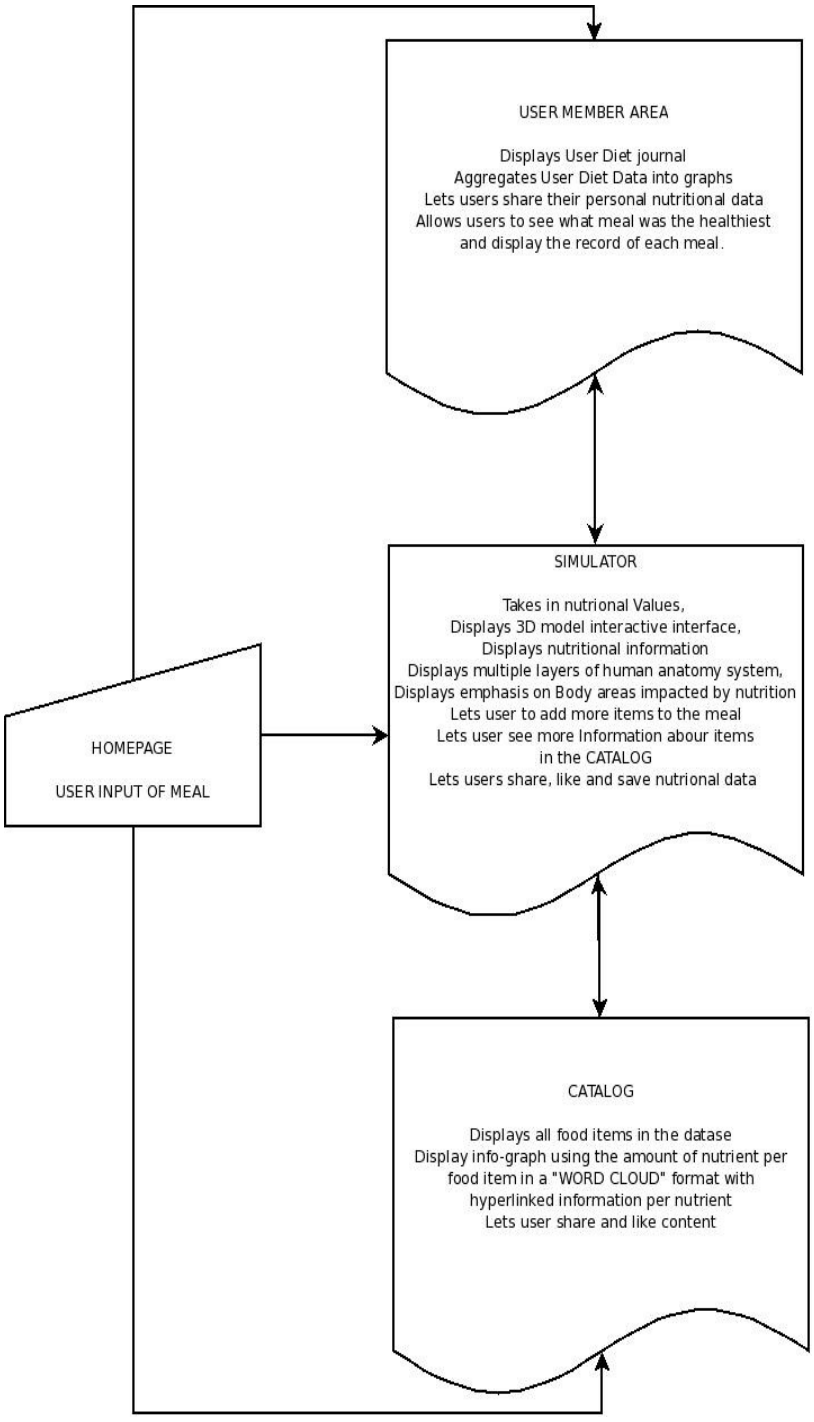
homework, what is happening? He clicks on coke to see the properties of the beverage in the catalogue. He had never thought of the properties of this drink before. Sugar rush at first, but over work next.

“OK. Tomorrow I’ll try drinking water and eating something without so many complex compounds,” he thinks.

Back-End Flowchart:



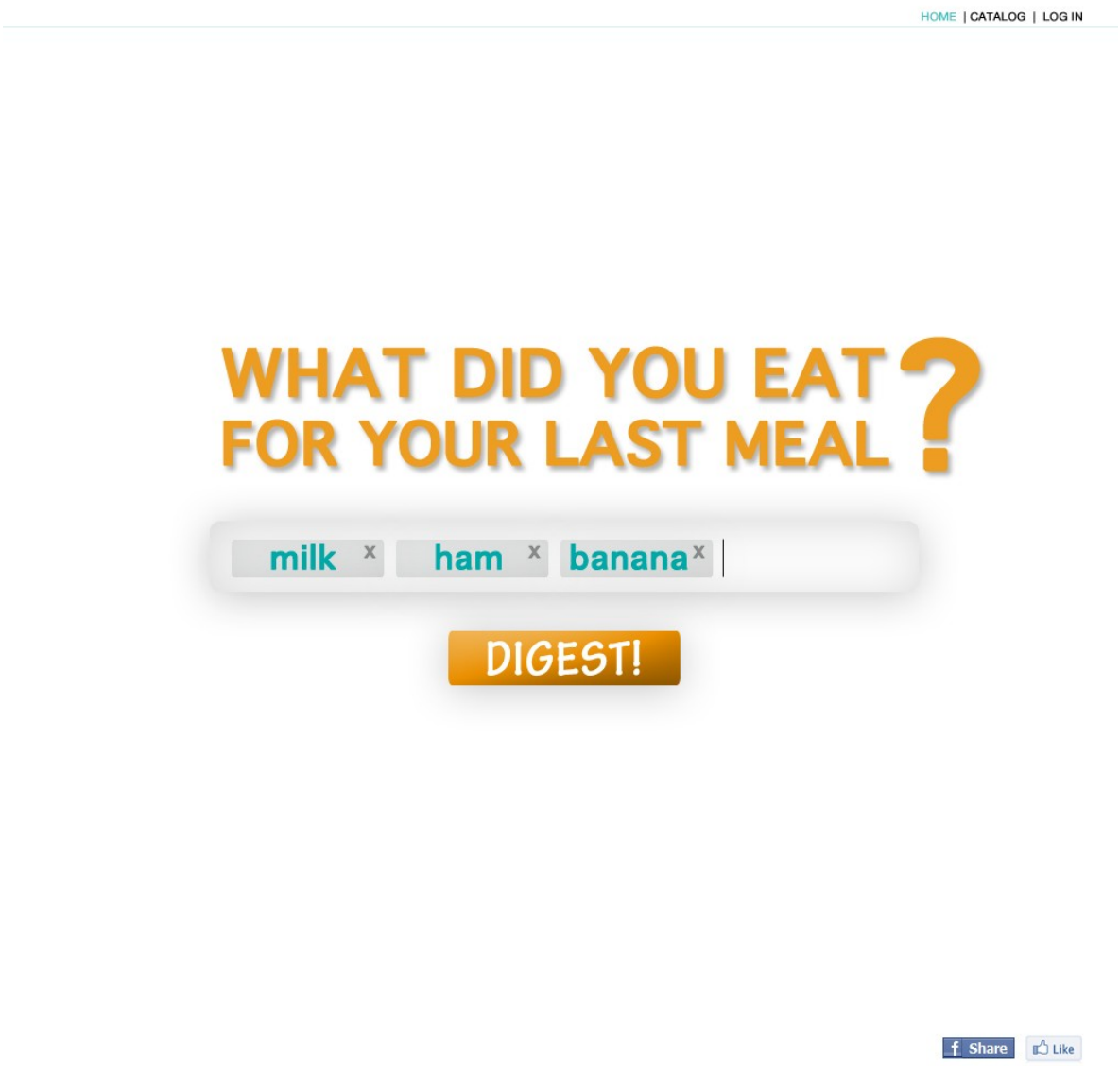
Front-End Flowchart:



Storyboard drafts

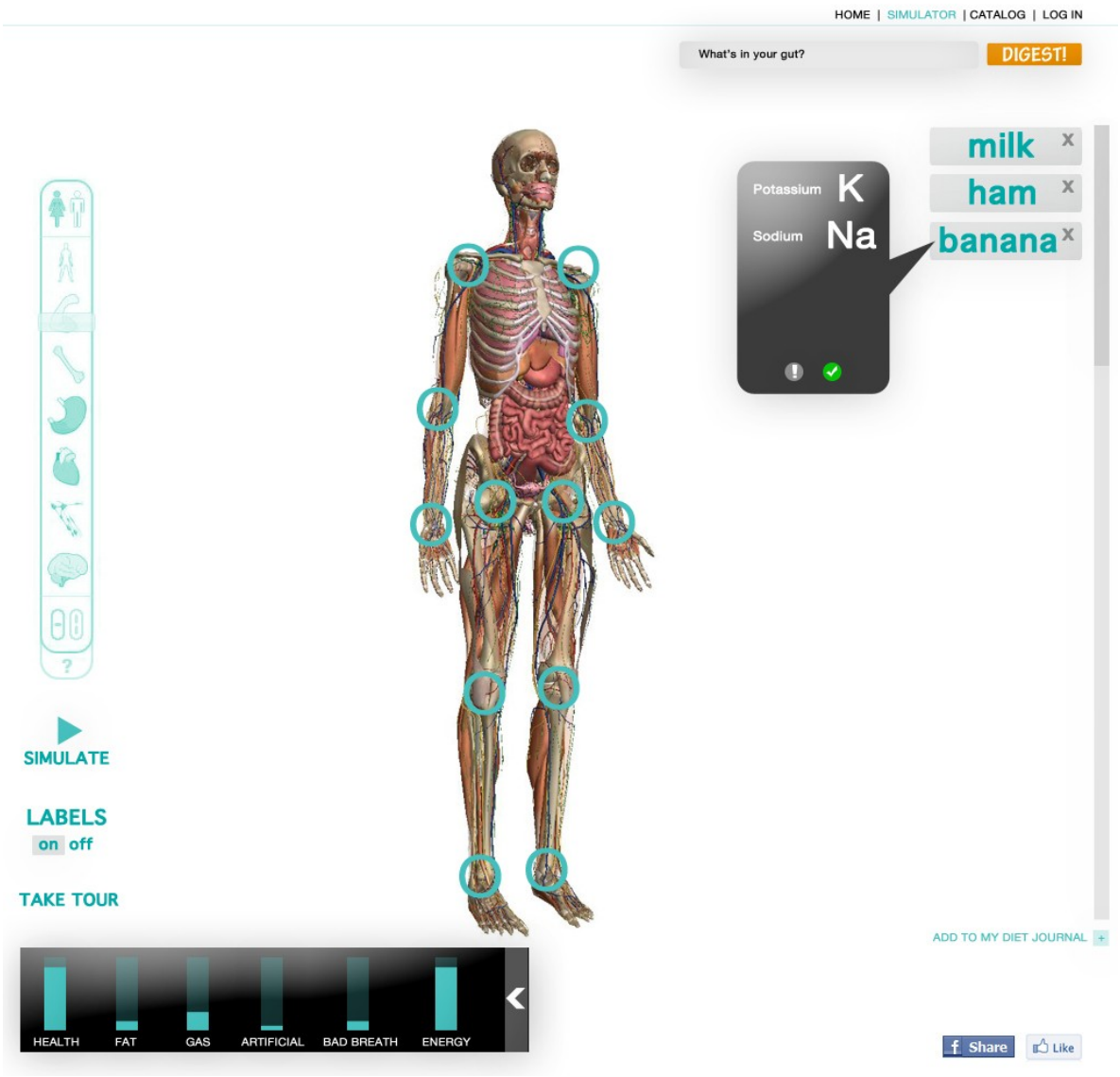
Screen 1:

Users will be prompt to enter their last meal into the text field.



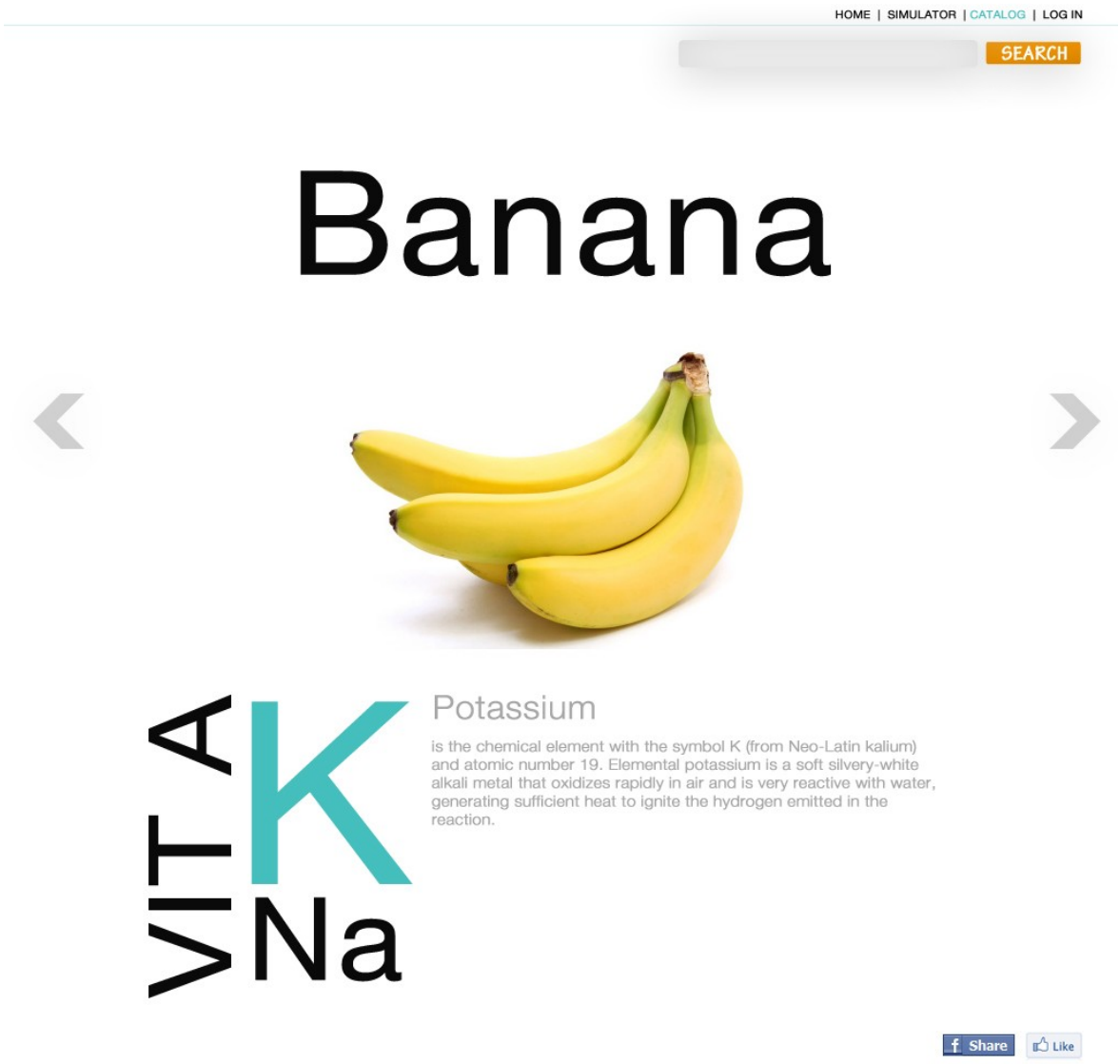
Screen 2:

Users will be able to see more related information related to their last meal's food items and simulations of the consequences of these food items in their body.



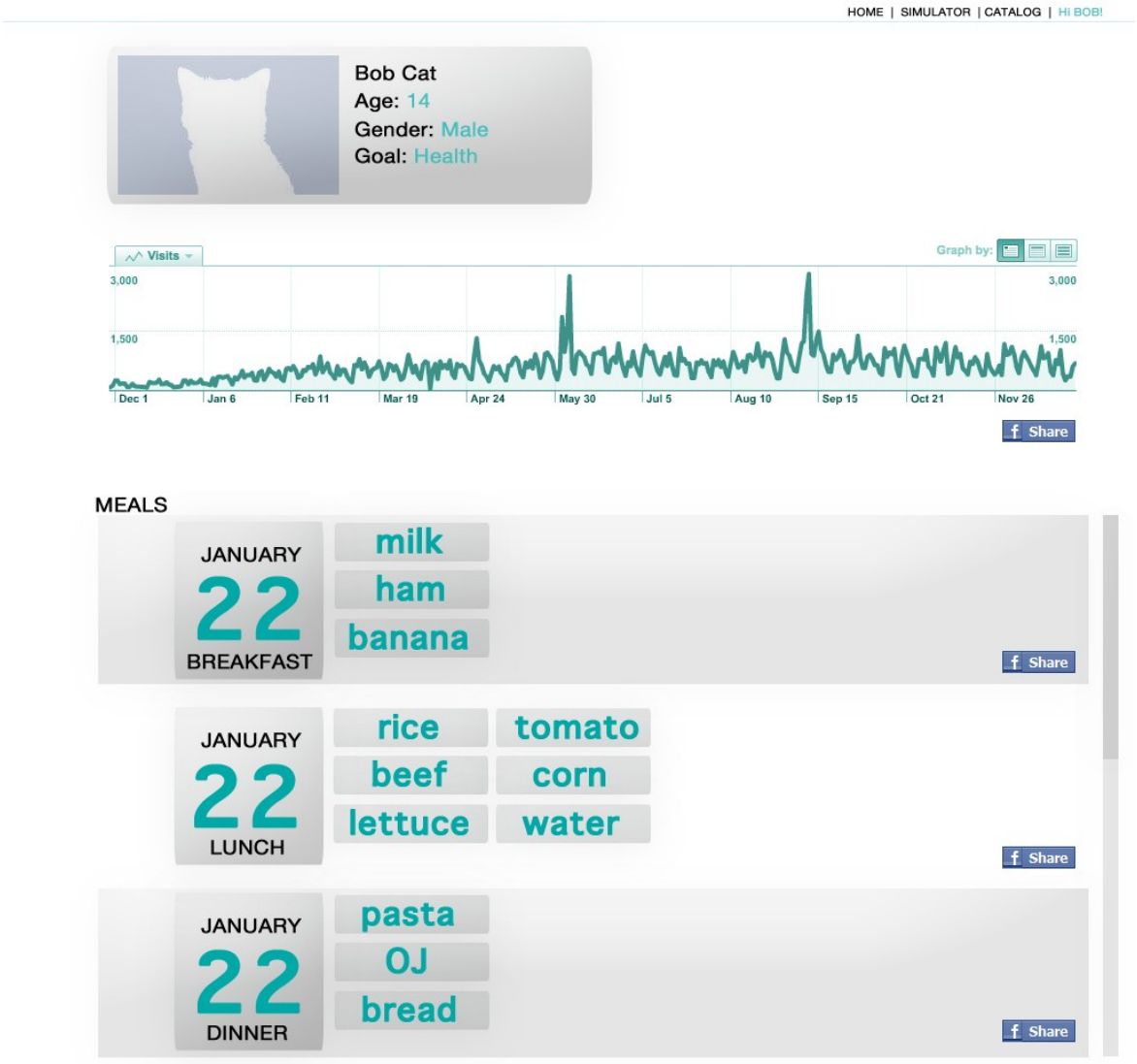
Screen 3:

Users will have the option to view the entire food catalog and the corresponding nutritional data for each item in the database.



Screen 4:

This screen is the user's member area where they can keep their nutritional information and keep track of their diet. The graph will show the health levels of the meals. The higher the coordinate the healthiest is the combination. The graph could allow users to see and learn from their own experience which dietary combination makes for a healthier choice.



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