

Family FEW

The main purpose of this app is to teach middle school students to look at the complex relationship between food, water, and energy consumption. This relationship is known as FEW in research, which is where the app name, Family FEW, comes from. This app will help teach students about this relationship in the form of a game that consists of buying food for a family while balancing costs and keeping consumption costs between some pre-set limits.

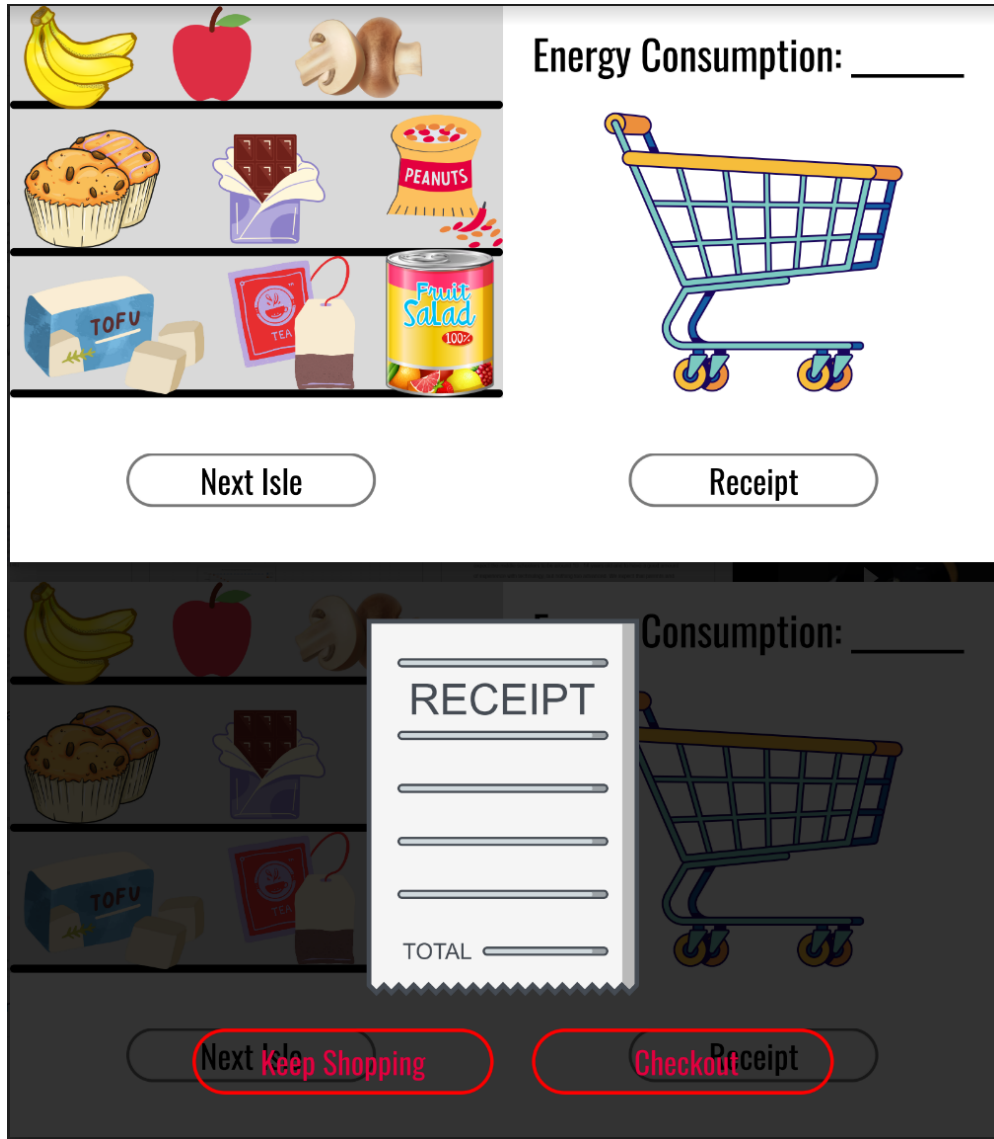
There will be two types of users, middle schoolers and teachers/parents. We expect the middle schoolers to be around 10 - 14 years old and to have a good amount of experience with technology, but nothing too advanced. We expect that parents and teachers will have a broad range of skill levels due to differences in age or background.

Middle school students use this game to simulate shopping for grocery items and add them to their cart. While items are being added, a receipt is made to calculate the cost of items, as well as an environmental impact cost based on each item in the cart. Levels could be implemented to give limits to the environmental impact cost to reduce it. Parents and teachers will interact with the game by viewing the results of their children/students.

The flow of gameplay goes as follows: The student opens the game, new players will be given a tutorial about the gameplay before starting the first level. As they progress through the levels, their score and the time spent playing will be recorded. The basic idea will be to select items from the aisles to place into their shopping carts. Upon selecting any item, a summary of that item's nutritional information and environmental

impacts will be displayed. Students will then be expected to make decisions based on this information to meet the requirements set for that level. Once they finish, they will see the results screen with their score and playtime, as well as a button to download the data to send the results to the teacher. The game can be replayed and the students can continue to send their results to their teacher, showing their improvement.

The major views that our app will have are the start page, a tutorial, levels, and a results screen. The start page is the main menu, which would include the title, play button, a way to log in, and a brief description of the game. Next would be a tutorial section, which could just be a simple page that explains the rules to students with screenshots to demonstrate. The main page that students will see as they play the game is the level view, which will show aisles for students to shop from. The results screen will be displayed at the end of the level, displaying the student's score and time spent playing for the teachers or parents to view. There will also be a simplified version of this view that will appear when a student selects an item to allow them to track their progress during gameplay.



Any required data will be provided as a spreadsheet by the team of scientists that will include the energy and water consumption details, nutrition, and impacts. The app will be responsible for temporarily collecting usage related data and gameplay statistics for reporting, analytical purposes, and educational statistics for teachers. This data will likely be utilized for in-game level-ups or any similar comparable features. However, we will not be storing any in-game statistics permanently in a database for the time being. It will be displayed as a summary at the end of the game and then discarded. We are

considering collecting some basic data such as the time spent playing the game for reporting purposes to the teachers/parents.

We have identified a few implementation challenges such as level design, integrating the spreadsheet data with the USSEIO Model, and possibly implementing a login system as a stretch goal. Level design is a challenge as we need to figure out difficulty scaling and calculate the correct answers ourselves. We plan to have a dynamic integration of the spreadsheet data so that the spreadsheet can be updated and the game can be easily updated with it. We have also identified the following usability challenges that include the students forgetting to screenshot the end screen summary, not knowing what an item is even with detailed descriptions, and issues with closing the game before you have finished.