



FLUX: Design Education in a Changing World

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Making, co-creating and testing games: Learning about nutrition through play – *Fitwits*

Abstract

There is substantial educational research on the benefits of play, designed learning opportunities and experiences that incorporate play, and ways that collaboration through play creates opportunities for teachable moments in children's lives (Resnick 2004). Our research is based on this foundation, using participatory design methods coupled with hands-on learning to create games and activities that teach kids and their families the fundamentals of good nutrition and dietary choices. During the generative research phase we developed games and activities in collaboration with the kids. Starting from the point of view of the learners leaves room for individualized interactions and distinct modes of game play, in which players can create their own ways of personalizing the core content to make the information resonate in their own lives. Our research team is motivated to understand the ways children learn to understand health and wellness and how their lifestyle behaviors are altered by their interactions with the games. This paper highlights the value of qualitative evaluation of product development and suggests ways that seemingly simple design interventions can improve the effectiveness of the product.

Key Words: *Participatory design research, community collaboration, education and games.*

Introduction

Childhood obesity is a national epidemic in the U.S., which is expected to compromise the health of an entire generation of children, putting them in grave danger of physical and emotional health problems. Early predictors show that obese children who do not break unhealthy eating patterns and begin to make meaningful changes are highly disposed to become obese adults. In Pennsylvania alone the percentage of at-risk overweight and obese children is 35.1%, with a record number of children reported to have type 2 diabetes (Pennsylvania Department of Health n.d.). In urban areas, the disparity between communities and health is especially dramatic, with economically and socially disadvantaged children the most ill-prepared of all groups to make informed choices about nutrition and health.

In direct correlation to the obesity epidemic there is an increased push for developing 21st Century Skills, which focus on creativity, innovation, problem solving skills, communication and collaboration skills (Partnership for 21st Century Skills 2003). Schools are feeling pressure to refocus their programming and to prepare their students for standardized assessment goals. Unfortunately, these pressures have resulted in drastically reduced opportunities for learning about healthy living and physical activity during the average school day (American Obesity Association, 2006).

Numerous efforts are being made to fight the obesity epidemic: national awareness campaigns around healthy eating, local and national initiatives to increase children's physical activity levels, and increased pressure on food corporations to provide accurate and comprehensive food labels to promote lower-fat and -sugar options. Government agencies have started working with schools across all 50 states in the U.S. to help children develop the lifelong habits necessary to promote health and learning. Growing numbers of health and physical activity-based programs for families struggling with obesity are being licensed by health insurers introduced to community venues and schools. Websites on childhood obesity have exploded with game shows, quizzes, forums, and information about portions, foods, and physical activities. Many of these websites try to appeal to an adolescent audience with playful interactive content. Most of these programs are heavily funded and/or subsidized by government agencies and large health-insurance companies. All have an interest in being a contributing factor in educating, voicing concern, and/or reducing the growing number of obese children in the United States. Our project has similar aims.

Identifying a design opportunity

Oftentimes, interesting ideas for projects start with a conversation—individuals talking, sharing their concerns, passions, and ideas for change. In June 2006, an interdisciplinary team of designers with expertise in games, arts and education, and design research methods, along with doctors and teachers, had a conversation about the growing epidemic of childhood obesity and what we as individuals could do to help create change. We knew that we wanted to help kids improve their lives, change their unhealthy patterns, and feel a sense of agency around their own health. We did not know which of the distinct health variables we wanted to target. Would we target sedentary lifestyles, television viewing, specific foods (soda and fast food), portion control, or all of the above? We began to explore all facets of the problem.

One of the many key pieces of information gathered during our literature review was the lack of information concerning childhood obesity and physicians' offices. There were a few articles written and/or products designed concerning the need for primary care providers to identify obese children accurately (Spurrier, Magarey, and Wong, 2006). Boardley, Sherman, and Ambrosetti (2007) cited that few physicians feel comfortable addressing obesity and may mention things like Body Mass Index without going into detail about its meaning. Additionally, physicians reported feeling limited in the amount of time they have to spend with each patient since they are often trying to deal with many different aspects of health at each visit. Further supporting our inquiry, Saelens et al. (2002) suggest, "innovative and efficacious weight-control intervention delivery approaches could decrease provider and participant burden and improve dissemination to the increasing population of overweight youth."

Our first major step involved running multiple sessions at the Children's Hospital Weight Management Clinic observing doctors and nutritionists talk to families about their weight problems and reviewing with teachers nutritional information included in the curriculum. We also interviewed students about their dietary habits. At the clinic we routinely observed that parents and children are handed a folder containing overly complex charts, contracts, and diagrams to assist them in their daily decisions with portion control and general nutrition. Unfortunately, the language and presentation of these materials inhibit their understanding, and thus adoption of the health recommendations, once they leave the doctor's office. Outside of the clinic, patients are left only with a chart of goals that they signed with the doctor, and a number of charts and lists with foods and plate configurations to help them construct well-portioned meals. Based on the body language of the patients discussing their health within the clinic setting, it was clear that their weight was a source of embarrassment and discomfort. When we observed follow-up sessions in the clinic, patients told us they did not use the chart but instead kept it in a drawer or folder, out of sight. This was one example of many that indicated to us that there was a need for a change in the health provider's approach.

Other factors came into play. For example the following comments were recorded during interviews with parents: "My daughter used to play outside all the time but the neighbor's pit bull got out a number of times and chased the kids, so they were terrified to play outside and stayed in watching television instead." Perception, and a lack of knowledge and accessible information played a major role in parents' understanding of how decisions were made concerning the well-being of kids' at school. The following events were reported: "Gym classes were canceled because kids were falling asleep in class." "When a mother was asked about the number of fruit servings her son has everyday she responded, "he eats cherry and strawberry Jell-O at least four times a day." In all cases when parents were asked they responded that portion control was the major reason for their child's weight gain. At various times during the sessions the nutritionist would point out key pieces of information on nutritional labels and suggested serving requirements. However, in almost every instance the patients were confused about the proper recommended amount, preventing them from making good choices. In the schools, when kids were asked directly about their eating habits most said they ate because they were lonely or bored. Some kids listed caffeine, grease, and calories as unhealthy components but most were generally vague on this point.

Through multiple observations at the weight-management clinic and at schools, it became clear that there was a palpable distance between physician/nutritionist/teacher and patient/child. Not only was much of the language too "medical" and "scholarly," children felt as though they were being targeted for making unhealthy life choices. All eyes were on the child and his/her weight, and the doctor and child went step by step through each moment of a child's day to pinpoint the negative behaviors influencing their health. While this might be a necessary first step in the process of educating the child/family about healthy living, we as designers and educators saw space for improvement of the overall communication of ideas and transfer of information into children's everyday lives.

In addition, we uncovered both the cultural and financial obstacles families face when they are told by doctors and health specialists to include more fresh produce and ingredients in their diets. Many economically depressed neighborhoods have few sources of fresh ingredients. Free lunches, which most of the children we have worked with receive, contain almost no fresh produce or unprocessed foods. These factors inhibit many children and families from being able to incorporate healthy foods into their daily intake.

At this point as a team we organized the information, and determined the problem issues we wanted to focus on: portion control, positive messages about food choices, and physical activity. By encouraging portion control in combination with physical activity, we are providing multiple modes of behavior change that can help children and families attain healthier lifestyles. We established several key points we would need to address in the generative design phase to help us better understand the product we were going to develop. They were as follows:

- Identifying behavior patterns that were contributing to ill health
- Determining the degree of confusing language and messages in food labels
- Understanding children's (and parents') beliefs around nutrition and health
- Uncovering children's self-perceptions around their weight and health
- Pinpointing all the positive and negative environmental forces in kids' lives
- Understanding the specific cultural contributors to obesity
- Understanding issues of agency and motivation in obese adolescents

Framing the problem

Our motivation is to understand the way in which children and families learn with the games—how their understanding of health and wellness and their lifestyle behaviors are altered by their interactions with games and ways their involvement in co-creating games helps to inform the research team's design process. Our framework uses current research on the benefits of play, designed learning opportunities that incorporate play, and ways that hands-on collaboration through play create opportunities for teachable moments in children's lives (Resnick 2004). The focus of this paper highlights the front-end, qualitative design-research methods used to develop a prototype for a product called *Fitwits*. Extensive time was spent on the development of these methods, helping us understand how participants discuss and deal with issues surrounding their own health.

The *Fitwits* program is a grassroots effort allowing teachers, after-school specialists, and doctors to augment existing curricula with more comprehensive medical/health information related to nutrition and physical activity. It focuses on healthy and unhealthy ingredients and stresses the importance of kid-appropriate portion sizes and amounts, which enables children to feel a sense of control no matter what meal they are provided with at home or in school. It is also designed to help facilitate conversations about health and health-related topics.

Getting started

The purpose of the generative research phase is to introduce the audience to the problem at hand, as well as to involve them in the design process. This phase often involves the cyclical idea generation and feedback with the audience as the co-designers. In the design field, participatory activities done with the audience and designer are often referred to as “make” or “generative” tools (Sanders, E.M., William, C.T., 2001).

Specific to our project we brainstormed game ideas, developed games, designed, and play-tested games about nutrition, portion, and exercise with the participants. Often these sessions resulted in a changed direction when ideas generated in our studio were not met with equal enthusiasm by our co-designers. Our goal was to provide an experience to participants that would encourage them to move physically, expose them to nutritional concepts, and allow them opportunities to express what they learned. The children, through their feedback, became co-creators of the next generation of materials (Gee, J.P., 2005). Playing games allows participants to create multiple models of behavior, clearly see outcomes of specific actions, track changes and benefits, and distance themselves from their own personas in order to interact other players (Gee, J.P., 2005). The game space also provides a safe zone for kids to engage in an active dialogue through play about alternative choices. Games also have the potential to promote a sense of agency in players, empowering them with the ability to make choices and control outcomes (Gee, J.P., 2003). The games were designed to open up possibilities for varied, individualized engagement and forms of expression. These opportunities allow for deeper understanding on the part of the participant (Gardner 1989).

Make or generative tools

We created a variety of activities for each of the summer sessions we facilitated. These activities provide a lens into the ideas and perspectives of the participating audience and provide us, as designers, the necessary information to later develop a product that would be effective and fun. The activities ranged in media and form from physical, visual, tactile, verbal, and written. Our plan incorporated a variety of research methods to conceptualize our approach. Our methods included the following:

- Observing adolescents' initial health consultation at the clinic
- Investigating food labels and product layout in supermarkets across Pittsburgh
- Performing ethnographic research within children's homes and schools
- Conducting phone interviews with parents and families after initial clinic visits
- Photographing public and private play spaces available to the children
- Encouraging the creation of an activity diary/list of favorite games
- Personalizing dishes and glasses to draw on the messages discussed during doctors' visits
- Encouraging kids to tag their homes with stickers to identify healthy/unhealthy foods.
- Shadowing parents while they shopped in the grocery store
- Transforming kids' schools and houses into obstacle courses and games for individuals and families

Participants

We worked with two groups of children over the course of six weeks. Our first session was with six 12-13 year old Caucasian girls from middle to upper-middle income families. The rest of our sessions, five over the course of three weeks, were with a group of twelve to fourteen African American children from low-income families, ages 8-12, who were taking part in a community summer camp program. The different reactions and participation of the two groups helped us create a more broadly appealing and age-appropriate final product. Important to note is that at all development stages of these sessions we were consulting with the doctors and nutritionists to ensure accuracy of content.

We created a variety of activities and iterations for each of our sessions working off the idea of portion control. Our final iteration incorporated the hand as a guide for measuring portion. We thought that the idea of a hand as a guide would be a powerful tool for kids because it is always accessible for reference. Whenever kids are making decisions about their food intake, they have their hands to serve as their guides. We consulted with the Weight Management Clinic's specialists to transfer the measurements of portion into the hand. Continual reinforcement of this core concept was necessary due to the confusion around portion and how it related to different types of meals.

During the first session with each of the groups of participants, we discussed all of the components of the hand, and gave the children tactile examples of the portions. This discussion and interaction around the visual messages and aids was designed to help children make the connection between the verbal and visual and the tangible content (Davis, Hawley, and MacMullan 1998). However, through assessment of the discussions that took place in later sessions, we determined that the success of this early activity was inconsistent. Some children easily grasped and understood the primary hand-portion messages thoroughly, and were able to de-contextualize and personalize its meaning in later sessions, while other children remained uncertain of the underlying reasons for portion control and healthy food choices.

In one of our sessions we facilitated a made-up game called Garbage Sandwich. Working from our early conversations around portion and healthy ingredients, we used this game to test/reinforce messages around portion and physical activity. Using recycled materials such as water bottles and cardboard boxes, children planned and developed their own obstacle course games and challenges. Using giant pieces of cardboard "bread" to signify the start and finish lines, two teams competed to create the most physically challenging and fun series of activities with the recycled materials (Figure 1a). We created proportionally accurate materials to extend the message of portion control and healthy choices. Each of the teams wore pedometers, which motivated them to outperform the other teams with fancy dance moves or steps (Figure 1b).

Based on the belief that "one way to encourage children to be lifelong learners is to frame their learning experiences within the context of their own lives" (Davis, Hawley, and MacMullan 1998), the concluding session of the summer was an hour-long scavenger hunt for the kids in the local grocery

store. This brought the kids into the space of decision making—the supermarket—to help extend the health and nutrition messages of the summer’s programming. By creating a game around healthy shopping choices and nutrition trivia, we were able to encourage positive behavior change and observe existing patterns of decision making and food consumption affecting kids’ health.

Many of the kids cited the Garbage Sandwich as one of their favorite activities all summer, which we see as powerful evidence for the effectiveness of these informal learning activities and co-created game opportunities. Our activities were thus unique in the health and game landscape, utilizing the attributes and outcomes of gaming (agency, engagement, self-defined rules and goals) to benefit and enhance learning of key messages that could positively affect children’s health and activity levels.



Figure 1a



Figure 1b



Figure 2

Reflection exercises

In sessions 2-4, we took time at the start of the day’s activities to reflect upon and discuss the previous session’s components and interactions with the kids. Reflection provided the opportunity for the team to take the learning from one problem or point of view and expand it further. It also allowed the team to discuss activities that didn’t work, shift gears, and possibly revisit perceived outcomes. This process also helped us clarify where we had been, and what we had to explain better or work through again with participants. For example, many kids remembered the idea that our stomachs are the same size as our fists and about the same size as a tennis ball, but some participants forgot other smaller ideas we had discussed around portion. This highlighted the need to clarify content and perhaps design more extensive activities reinforcing portion throughout the sessions.

Development Stage

As we transitioned into the development and design for the *Fitwits* game we expanded our partnerships to include the Pittsburgh public-school system. We started working with two 5th grade classes: the Fort Pitt Accelerated Academy and the Pittsburgh Montessori School. Both are part of the UPMC St. Margaret’s Family Health Centers. This collaboration pairs two institutions (education and medicine/health care) to address community and public health concerns relatively early in the lives of children. *Fitwits* was added to the last week of a six-week class on puberty and human sexuality, so it now includes nutrition.

Once the initial design of the game was realized, we facilitated a number of sessions, play testing our game with the students. We received invaluable feedback and assistance from the teachers and students, on developing the appropriate educational content, on ensuring fun and engaging game mechanisms, and on creating relatable personas for a series of *Fitwits* characters, which give voice and help brand the game. After assessing which areas were both most engaging and least effective, we began to sketch out the makings of the final design product. We agreed that the game would need to be designed for doctors and teachers to use with their patients and students in order to reinforce ideas around nutrition and physical activity. We began to conceive of the game as a tool for educators and health practitioners that could then be transferred into the home and played by children in their everyday environments. In this way, the game would make the health messages relevant by continued interaction with the educational content. Overarching objectives for *Fitwits* are as follows:

- Identify behavior patterns contributing to ill-health
- Clarify the degree of confusing language and messages in food labels and portion sizes
- Educate best practices around nutrition and health
- Speak to children’s self-perceptions of their weight and health
- Pinpoint the positive and negative environmental forces in families and kids’ lives
- Reveal specific cultural and social contributors to obesity
- Address issues of agency and motivation through games in diverse communities

Using the hand portion guide as a springboard, we worked to incorporate these core ideas about matching portions with hand gestures into the final game design. We prototyped and piloted a group of cards that can be played like the classic game of memory. On half of the cards, images of specific hand gestures related to portion are shown. On the other half of the cards there are images of different types of foods that match those portion sizes. The memory game embodies the idea that learning is enhanced through visual and physical engagement. By involving the learner in multiple ways—textually, visually, and through touch—we support distinct learning styles and enable broader participation in the game (Arnheim 1969). Using a familiar setup such as memory empowers players to move beyond the rules and understand the content more deeply (Figure 3).

We learned a great deal from facilitating the movement game during the generative phase. All of the participants showed enthusiasm and motivation to learn the way the game was played and really enjoyed the entire sequence of activities. We felt that we wanted to incorporate all the positive aspects of this activity into the final *Fitwits* game—individual movements, creative physical activity, low-key competition, and some sense of silliness. We created a set of Act and Move cards. Played on their own, or through the board game, the movement cards set up an instant relay race between players or teams.

It can be assumed that the media have a huge impact on children's lives and identity development. Many of children's preferences and ideas around image and health are formed by television and other media content. Many of these advertisements are for unhealthy, sugary, high-fat foods. To counter this we want to empower children to easily detect the negative attributes of those items. So we created the *Fitwits* characters, each one an entire healthy meal or snack, to serve as counter-models to the array of cartoons used to brand unhealthful cereals and meals. We hired an illustrator to build a world of *Fitwit* characters that were both healthy and unhealthy. These characters are on profile/recipe cards so that kids and families can learn about the components of both types of meals using a simple rating system. The healthy meal characters act as role models for the players—they are active, fun and easy to relate to—whereas the unhealthy characters aspire toward health but embrace unhealthy lifestyles that make it hard to stay active and have fun.

The characters were conceived when introduced by one of the participants in one of our participatory sessions. When we facilitated a plate-painting activity, we instructed the children to include imagery and create a message for themselves stemming from our discussion of portions and healthy eating. One participant demonstrated his understanding by creating characters for each part of the hand. He illustrated “two fingers” of cheese and the palm as a piece of meat. His characters were kid-friendly and as a product, created a resonating visual message around portion control (Figure 2).

We conducted basic pre- and post-surveys after each full session with the 5th grade class. The pre-survey was administered the first week of the puberty-human sexuality course asking kids general knowledge about portion, nutrition, health, and unhealthy foods. After the *Fitwits* session we administered a post survey. We noticed a considerable change in the way kids talked and wrote out their responses, incorporating key vocabulary and concepts around portion, health, and unhealthy ingredients. We also used the post survey to engage kids' interest level as indicated by the following comments: one participant's response when asked what he liked least about the *Fitwits* program was, “you can only eat a little bit of French fries.” Another said “that the food you love is also bad for you” and concluded with “It stinks to learn that you should only have three fingers worth of French fries”.

Others were asked what they would remember the most about *Fitwits*. The responses included: “the health of eating right,” “to grow up and eat healthy but still eat the stuff you like that is not healthy—just not all at the same time,” “that you should only eat a hamburger as big as your palm,” “the *Fitwits* and the *Nitwits*,” and “the things about the French fries.”

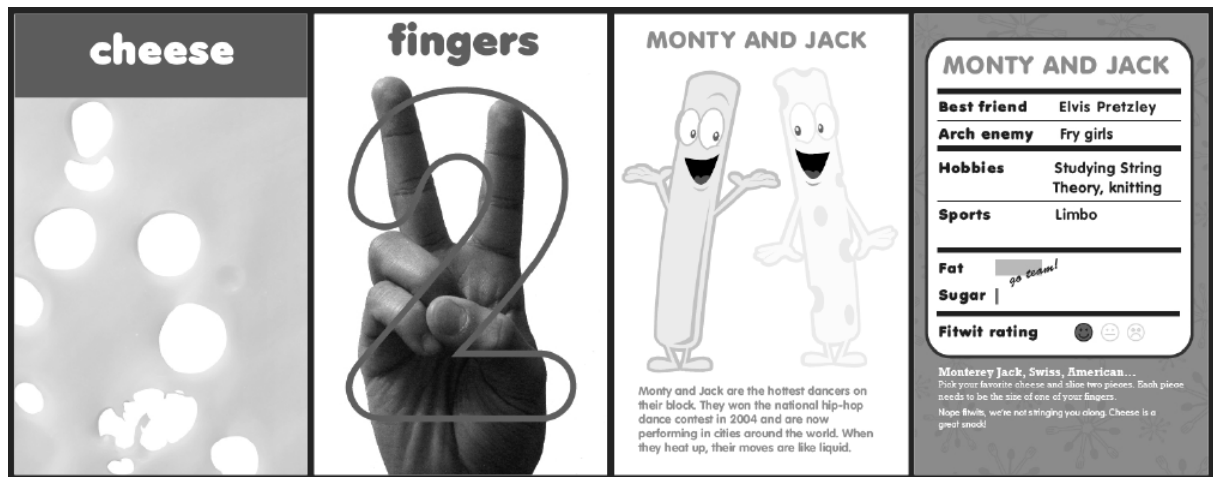


Figure 3

Insights and future work

Fitwits is designed to address many varying educational levels. Throughout the *Fitwits* design process, we observed the ease with which children and adults interacted with the language used in *Fitwits* materials. To date we feel the design process afforded us invaluable opportunities: creating a game that can make real, measurable changes. As we work to expand the program we will incorporate methods for measuring and evaluating the game and learning outcomes.

The enthusiasm, sharing of ideas, and collaboration exhibited when kids, doctors, and teachers are playing *Fitwits* was rewarding. The game enables the child to feel part of the discussion about health, instead of feeling like the recipient of a lesson or the target of a health intervention. It was designed to encourage hands-on learning, allowing kids the opportunity to interact with each other, ask questions, negotiate, invent, and play with each other.

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CURRICULUM VITAE



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Kristin Hughes is an assistant professor in the School of Design where she teaches a range of courses including first year, junior, and senior level studios, typography. Recurring themes in her research and professional practice focus on utilizing design methods as a catalyst for community and civic engagement. She is currently looking at the design of products that allow participants agency over their own learning space. They are invited as co-creators in the design process, a process that they may eventually engage and sustain on their own. Most recently, this question has led her to explore game design, examining learning processes and ways that play spaces provide a powerful platform for uninhibited learning.

Hughes' most recent project, in collaboration with the University of Pittsburgh Medical Center, is Fitwits, a series of games designed to educate and encourage smart choices in nutrition, portion control, and physical activity. Other projects include Click! Urban Adventure, an interactive role-playing game designed to immerse middle school girls in discipline-specific science, technology, engineering and mathematics activities. Hughes also collaborates on *explanatoids*, an interdisciplinary project funded by the National Science Foundation. The project brings science, technology, engineering and mathematics topics to the general public by placing signs and other artifacts in public spaces to encourage curiosity and understanding of science in everyday life.

Prior to her work at Carnegie Mellon, Hughes was a designer at Plus Design, Inc., a Boston based firm. She was an art director and project manager at The History Factory, a corporate communications firm in Washington DC, and worked at Segura Design, in Chicago.

OCTOBER 2007 DEFSA :: FLUX
DESIGN EDUCATION IN A CHANGING WORLD

Making, co-creating and testing games: Learning about nutrition through play – *Fitwits*

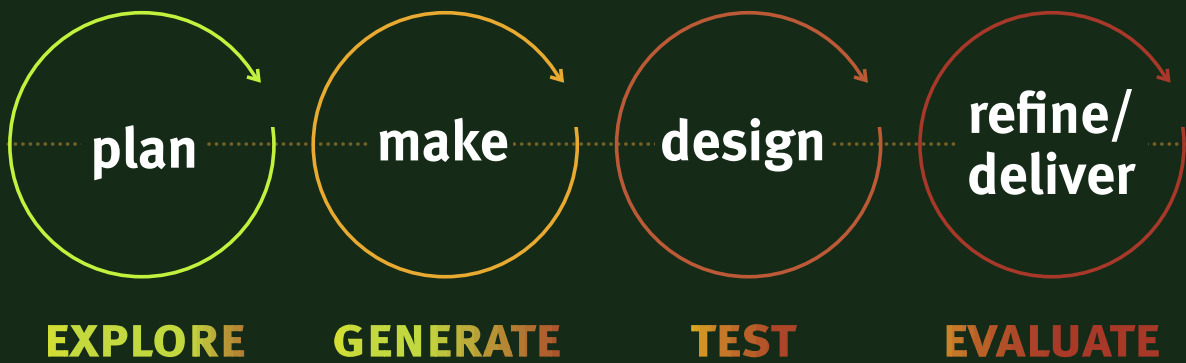
KRISTIN HUGHES :: ASSOCIATE PROFESSOR :: SCHOOL OF DESIGN
CARNEGIE MELLON UNIVERSITY :: PITTSBURGH :: PENNSYLVANIA USA

Interview with Charles Eames (Qu'est-ce-que le Design (1969))

WHAT ARE
THE BOUNDARIES
OF DESIGN?

What are the
boundaries
of the problem?

Identifying and seeking-out opportunities for Design



Model departs from original designed by Shellie Evenson, Carnegie Mellon

Design an effective tool to educate children and families about the role nutrition, portion and fitness play in a healthy lifestyle.

Collaborators and Partners


- University of Pittsburgh Medical Center's Wellness Clinic
- UPMC SMMH Family Health Centers, physicians and nutritionists
- Middle school teachers
- 5th graders from Fort Pitt Elementary
- Bloomfield Garfield Corporation
- Kids and parents from Pittsburgh
- The Heinz Endowments



Today, twice as many children—three times as many teens—are overweight as in 1980.



The average American child spends about 44.5 hours per week using media outside of school.



Obesity & poor nutrition together account for over 300,000 deaths in the U.S. each year.

observation

contextualize

Overview of methods used:

- Literature review
- Observe, interview and shadow the doctors and nutritionists at the Clinic
- Interviews and surveys with families
- Inventory of the popular culture
- Ethnographic research at schools

discover

cultural probes

assumptions

perceptions

immersion

challenges

investigate

Overview of methods used:

- Field work in the grocery store
 - Shadow families while they shopped
 - Show kids how to examine food labels and packaging
 - Investigate product layout
- Create and play games
- Photograph public and private play spaces available to children

observation

contextualize

discover

cultural probes

assumptions

perceptions

immersion

challenges

investigate

Patients have difficulty understanding what the doctors and nutritionists tell them at the Wellness clinic.



“He eats cherry and strawberry Jell-O at least four times a day.”

“Gym classes were canceled because kids were falling asleep in class.”

“My daughter used to play outside but the neighbor’s pit bull got out a few times and chased the kids, so they were terrified to play outside.”

Other facets of this same problem are illustrated here.

DAILY FOOD LOG

(please list type and number of the following foods eaten in the past 24 hours)

	DRINKS	DAIRY	VEGETABLES	GRAINS	FRUITS	MEAT/ BEANS/ EGGS	FAST FOOD/ SWEETS
Early morning							
Mid-morning							
Midday							
Early Afternoon							
Late Afternoon							
Evening							
Late Night							
TOTAL							

please circle eating in/out of the home

Home icons:

HEALTHY PLATE

How much of each food group should you eat?
1. Grains/Protein
2. Starches/Grains
3. Fruits/Vegetables

Please use the markers provided to fill in the slices with the appropriate balance of different food types.

Breaking down assumptions

types of meal?
one
the proportion of foods that
balanced meal.
Please use the markers provided to fill in the slices with the appropriate balance of different food types.

NUTRITION LABEL

What is on nutrition labels?
Please draw what a typical nutrition label looks like. Please use box #1 to fill in as many details as possible.

Do you usually read nutrition labels before buying items? What do you look for on the label if you do?

Is there any information that would be useful for you on a label that isn't there? Please use box #2 to fill in the label with information that you would find helpful.

1. Guide to portion control which are easy to understand
2. Creative/accessible physical activities
3. Establish positive personas & role models
4. Educational tools to help kids and families navigate the vast food landscape

Why start with games?

- Provides way to challenge learned behaviors
- Creates knowledge around health
- Allows for spontaneous interaction and decision making
- Reinforces meaningful play
- Builds and supports a subculture for our co-creators

We designed a variety of games that provided a different perspective of the participating audience. The games ranged in media and form from physical, visual, tactile, verbal, and written.



Multiple iterations of the educational content were designed and tested with kids, teachers and doctors to validate accuracy.

THUMB'S UP

PEACE

PINKY SWEAR

2 OUNCES = 2 FINGERS (cheese)

2 TEASPOONS

1 TEASPOON = THUMB TIP (butter)

1 CUP = 1 HAND FULL (meat, pasta, milk)

HALF CUP = HALF PALM (chips)

1 TABLESPOON = THUMB LENGTH (peanut butter, mayonnaise)

2 OUNCES CHEESE

2 TEASPOONS SUGAR

1 TEASPOON BUTTER

1 CUP

TIE A STRING AROUND YOUR PINKY TO REMIND YOU

THUMB

1 TEASPOON = THUMB TIP (butter)

1 TABLESPOON = THUMB LENGTH (peanut butter, mayonnaise)

HELPING HAND

portion guide to help see what's right for you!

2 OUNCES CHEESE

2 TEASPOONS SUGAR

1 TEASPOON BUTTER

1/2 CUP CHIPS

1 CUP MEAT OR PASTA

1 TABLESPOON MAYONNAISE



MISSION 3
inside out
and back
again game

1 _____
 name two games you can only play outside

name two games you can only play inside

Activities, games and questionnaires were designed to help us better understand the likes and dislikes of our audience.

YOU ARE A STAR!

 FILL IN YOUR NAME

Each week commit to making **2** small changes in your everyday life

1 _____

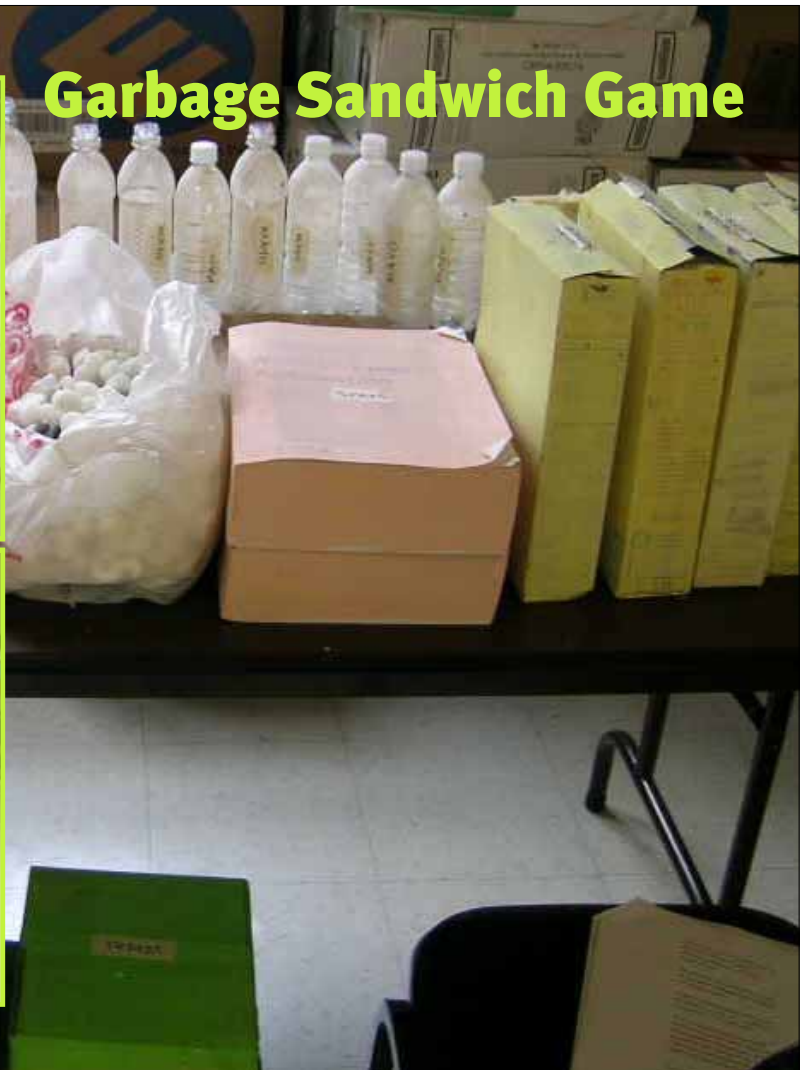
2 _____



Personalized dinner plates



Garbage Sandwich Game



Grocery Store Scavenger Hunt



Fitwits are a series of games designed for kids between the ages of 9–11. They are embedded with positive, educational health content regarding nutrition and physical activity. The games provide opportunities for multiple modes of learning.

We expect to change or influence the following:

- Change behavior patterns contributing to ill-health—primarily sedentary lifestyles and poor nutrition choices leading to obesity or other serious health consequences
- Educate parents and children about the often-confusing language terms on food labels
- Teach parents and children to evaluate serving sizes
- Teach best practices around nutrition, health and physical activity
- Inform children’s self-perceptions around their weight and health

We expect to change or influence the following:

- Break down barriers with doctors to talk about weight, make it easier to approach the subject of nutrition/ exercise with children and parents/guardians in the office setting

Meet our co-designers



Helped to developed the Fitwits characters and personas, tested and played each of the game components, determined which trivia to include

Doctors & teachers playing the games and validating content



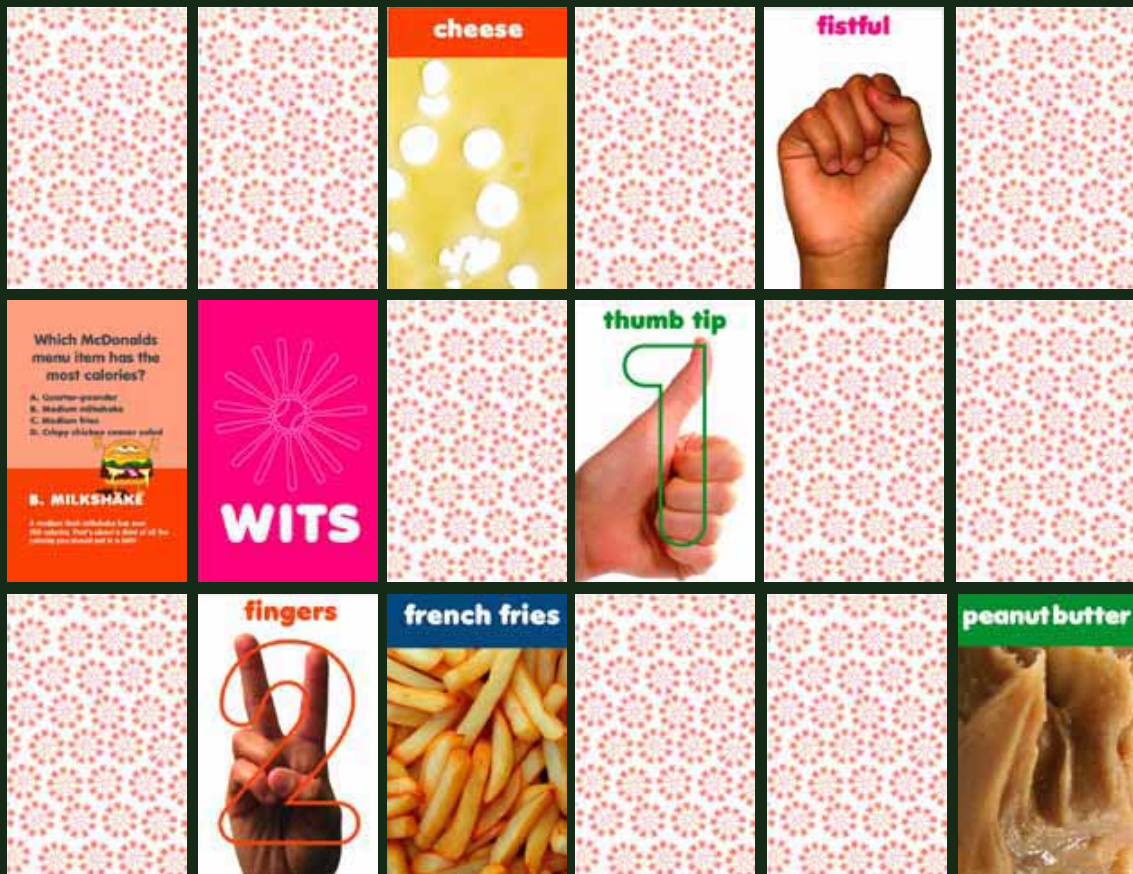
A few of the Fitwits crew and their pals the Nitwits

<p>QUEEN OF WHEAT</p> <p>All of her family hold the Queen of Wheat is the most beautiful! They wear beautiful of the big ones and everyone who has the Suite and hair for best fit thing in the morning.</p>	<p>QUEEN OF WHEAT</p> <p>Best friend: Sunny Tots Arch enemy: Frankie Fishes</p> <p>Dance move: Twist, shout, and swing your hips</p> <p>Sports: Rollerblading, Double Dutch</p> <p>Fat: [Progress bar]</p> <p>Sugar: [Progress bar]</p> <p>Fitwits rating: [Progress bar]</p>	<p>ELVIS PRETZLEY</p> <p>Who is a great performer! He can walk, dance, talk, and act on stage. His friends like to get in a show a lot. He goes to the most things to see. He has to go to the beach.</p>	<p>ELVIS PRETZLEY</p> <p>Best friend: Monty and Jack Arch enemy: Ella loves all</p> <p>Dance move: The Twist and Shout</p> <p>Hangouts: Heartbreak Hotel</p> <p>Fat: [Progress bar]</p> <p>Sugar: [Progress bar]</p> <p>Fitwits rating: [Progress bar]</p>	<p>SENIOR CUKE AND RONA CHERRY</p> <p>Like and Rona are the healthiest! Seniors. They like to take to school party and wear into evening. They are a great team. Don't be shy to show a lot. They are the most things to eat. They are the best things to eat. They are the best things to eat.</p>	<p>CUKE AND RONA</p> <p>Best friend: The Spud Family Arch enemy: The Belchers</p> <p>Hobbies: Vegging out</p> <p>Hangouts: The farm, the bowling alley</p> <p>Fat: [Progress bar]</p> <p>Sugar: [Progress bar]</p> <p>Fitwits rating: [Progress bar]</p>
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The Nitwits aspire towards health but embrace unhealthy lifestyles.

<p>PETE ZA</p> <p>Pete is your average slice. He likes to play it cool but peppermint and extra cheese can really start to wear down your friends! You know what? Frank has been in a party because his granny had all of follows him whenever he goes.</p>	<p>PETE ZA</p> <p>Best friend: The Belchers Arch enemy: The Broc Tots</p> <p>Hobbies: Watching movies with friends</p> <p>Sports: Grease ball throwing</p> <p>Fat: [Progress bar]</p> <p>Sugar: [Progress bar]</p> <p>Fitwits rating: [Progress bar]</p> <p>Use your wits, how can you make Pete healthier?</p>	<p>CHIP AND THE LITTLE CHIPPER CREW</p> <p>Chip's crew follows him wherever he goes. Once Chip leaves you in, your stuff hanging out with the whole crew.</p>	<p>CHIP AND CREW</p> <p>Best friend: Fry Girls Arch enemy: Pop-Rockets</p> <p>Hobbies: Clicking the TV remote</p> <p>Sports: Dressin' up & layin' around the ranch</p> <p>Fat: [Progress bar]</p> <p>Sugar: [Progress bar]</p> <p>Fitwits rating: [Progress bar]</p> <p>May Fitwits! What kind of chips should you hangout with? (hint...starts with a 'Y')</p>	<p>MIC AND DONALD NUGGET</p> <p>Did you know that? Who are you calling chicken? Your source is hounding my source. You're just afraid you'll be the last nugget standing. For the best time, watch the source, Donald! Seriously cool! (Silly) I heard something.</p>	<p>THE NUGGETS</p> <p>Best friend: Chip's girlfriend Arch enemy: Phil and Spill</p> <p>Hobbies: Skinny dipping, deep fry dipping</p> <p>Sports: Bowling</p> <p>Fat: [Progress bar]</p> <p>Sugar: [Progress bar]</p> <p>Fitwits rating: [Progress bar]</p> <p>What other high fat foods hide in cardboard boxes?</p>
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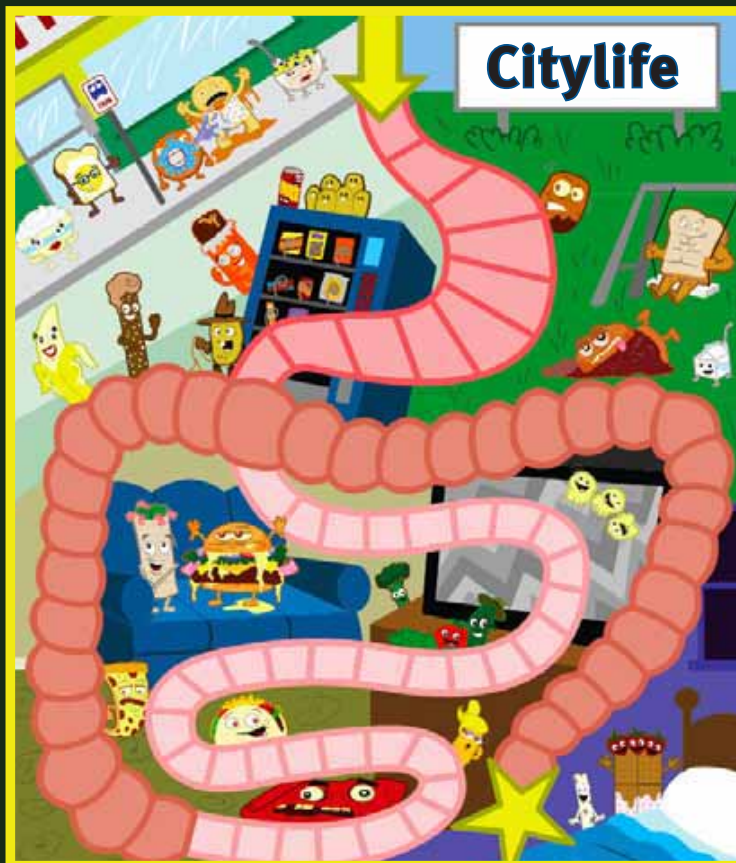
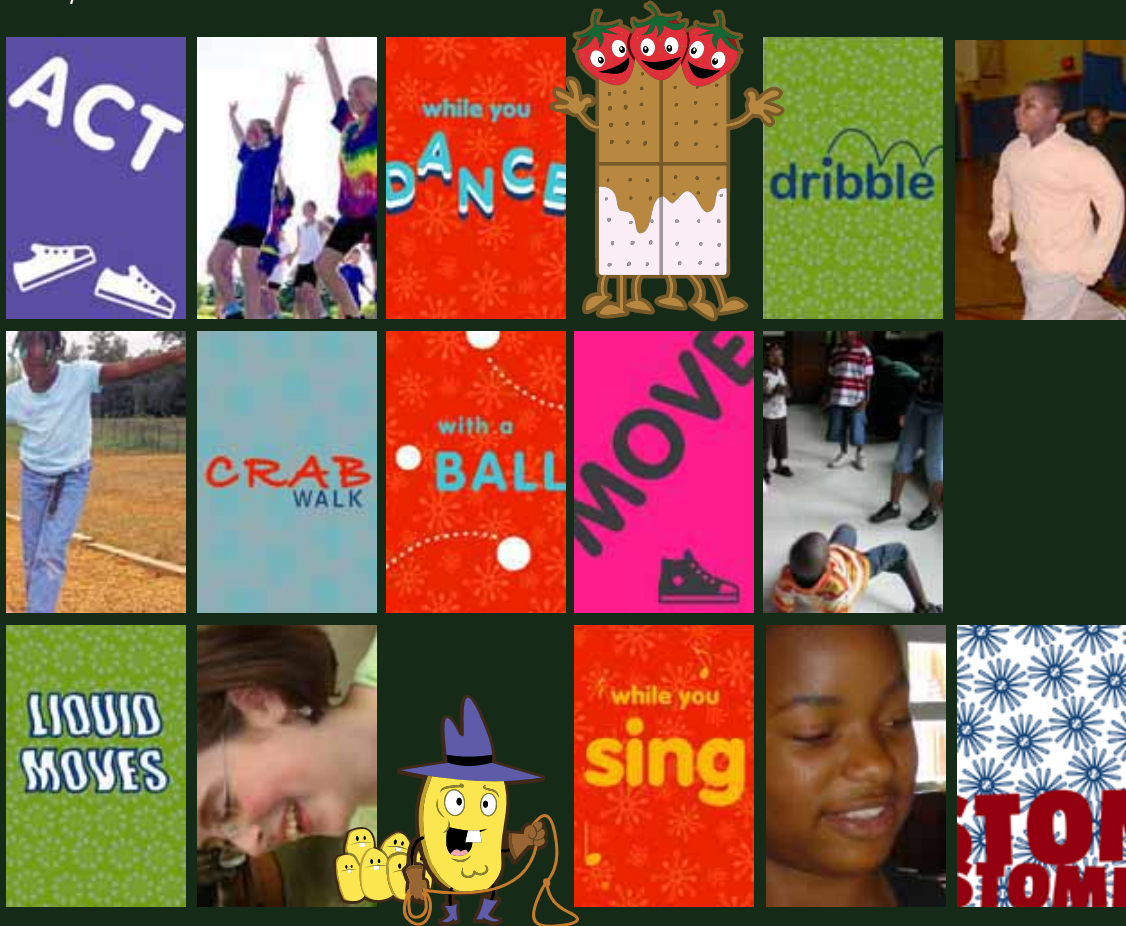
Memory Game



Great job! Only two fingers worth of cheese in a serving

<p>cheese</p>	<p>fingers</p>	<p>MONTY AND JACK</p> <p>Monty and Jack are the hottest dancers on their block. They won the national hip-hop dance contest in 2004 and are now performing in cities around the world. When they heat up, their moves are like liquid.</p>	<p>MONTY AND JACK</p> <table border="1"> <tr> <td>Best friend</td> <td>Elvis Pretzley</td> </tr> <tr> <td>Arch enemy</td> <td>Fry girls</td> </tr> <tr> <td>Hobbies</td> <td>Studying String Theory, knitting</td> </tr> <tr> <td>Sports</td> <td>Limbo</td> </tr> <tr> <td>Fat</td> <td>go team!</td> </tr> <tr> <td>Sugar</td> <td></td> </tr> <tr> <td>Fitwit rating</td> <td>😊 😐 😞</td> </tr> </table> <p>Monterey Jack, Swiss, American... Pick your favorite cheese and slice two pieces. Each piece needs to be the size of one of your fingers. Hope folks, we're not stringing you along. Cheese is a great snack!</p>	Best friend	Elvis Pretzley	Arch enemy	Fry girls	Hobbies	Studying String Theory, knitting	Sports	Limbo	Fat	go team!	Sugar		Fitwit rating	😊 😐 😞
Best friend	Elvis Pretzley																
Arch enemy	Fry girls																
Hobbies	Studying String Theory, knitting																
Sports	Limbo																
Fat	go team!																
Sugar																	
Fitwit rating	😊 😐 😞																

Act/Move Game.



Citylife and the **Food Pyramid** utilizes all the individual games into one experience that can be played with four to six players.



Currently, community health doctor's and designers are play testing and evaluating the prototype in five public schools.



Eventually we will expand to other after-school programs and organizations like the Boys and Girls Club, and YMCA.

What is next for Fitwits?

- Expansion of partnerships (schools, after-school, health care facilities)
- **Grow the Fitwits Program to include:**
 - Fitwits Flash cards; public service messages (commercials-breaks on health), series of civic advocacy posters and booklets for parents, Fitwits website, Fitwits in Doctors' Office Spaces: The Waiting Room and Patient Care Rooms
- **Set-up of a three year longitudinal study of the impact of the Fitwits games on children, and family health care providers.**