

**A SYSTEM THAT PROMOTES HEALTHY EATING HABITS IN
PRESCHOOLERS**

A Thesis
Presented to
The Academic Faculty

by

Ga Bin Park

In Partial Fulfillment
of the Requirements for the Degree
Master of Industrial Design in the
College of Architecture

Georgia Institute of Technology
August 2008

A SYSTEM THAT PROMOTES HEALTHY EATING HABITS IN PRESCHOOLERS

Approved by:

Abir Mullick, Advisor
School of Industrial Design
Georgia Institute of Technology

Kevin Shankwiler
School of Industrial Design
Georgia Institute of Technology

Claudia R. Winegarden
School of Industrial Design
Georgia Institute of Technology

Date Approved: July 7, 2008

ACKNOWLEDGEMENTS

I would like to thank my mom, dad, sister and brother for giving me the support I needed these past three years. Without you, I would not have made it this far. I would also like to thank Abir Mullick, Kevin Shankwiler, Claudia R. Winegarden and Carla Diana for their time and guidance here at Georgia Tech. You have given me a new appreciation for design and its endless possibilities. To my classmates, Marisa Topping, Camilo Vargas and Xiaoyi Ye, thanks for bringing laughter and encouragement into our window-filled studio. .

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iii
LIST OF TABLES	vi
LIST OF FIGURES	vii
SUMMARY	ix
CHAPTER1: INTRODUCTION	1
Background	1
CHAPTER 2: LITERATURE REVIEW	4
Known Causes of Unhealthy Eating	4
Prevention and Intervention Programs	6
Current Methods that Promote Healthy Eating Habits	7
CHAPTER 3: DESIGN EXPLORATION	9
Instructional Cookbook Concept	9
CHAPTER 4: METHODOLOGY	25
Research Methodology	25
Analysis	26
CHAPTER 5: DISCUSSION AND CONCLUSION	29
Discussion	29
Conclusion	31
APPENDIX A: CONCEPT BRAINSTORM	32
APPENDIX B: INITIAL MOCKUPS	39
APPENDIX C: CONCEPT REFINEMENT	42
APPENDIX D: QUESTIONNAIRE, INTERVIEW CHARTS	59

LIST OF TABLES

	Page
Table 1 Questionnaire Chart	64
Table 2 Interview Chart 1	69
Table 3 Interview Chart 2	70

LIST OF FIGURES

	Page
Figure 1 Complete Cook’n Learn Interactive Kitchen Set	12
Figure 2 Introduction page	14
Figure 3 Age appropriate page adapted from WIC	15
Figure 4 Healthy Eating Habits definition page	16
Figure 5 Food group and serving size page	17
Figure 6 Serving size guide page adapted from WIC	18
Figure 7 “Go, Whoa, Slow” chart adapted from We Can program	19
Figure 8 Dinner recipe	20
Figure 9 Story introduction	20
Figure 10 Emphasizing variety	21
Figure 11 Symbols	22
Figure 12 Child’s recipe page	23
Figure 13 Ingredients page	24
Figure 14 Insights List	33
Figure 15 Brainstorm Domain and Insights 1	34
Figure 16 Brainstorm Domain and Insights 2	35
Figure 17 Brainstorm Concept Sketches 1	36
Figure 18 Brainstorm Concept Sketches 2	37
Figure 19 Initial Scenarios	38
Figure 20 Mockup One	40
Figure 21 Mockup Two	41
Figure 22 Cookbook Concept One	43

Figure 23 Cookbook Concept Two	44
Figure 24 Cookbook Concept Three	45
Figure 25 Cookbook Concept Four	46
Figure 26 Cookbook Concept Five	47
Figure 27 Instructional Cookbook Cover	48
Figure 28 Parent Instructional Cookbook directions	49
Figure 29 Parent Instructional Cookbook food substitution chart	50
Figure 30 Parent Instructional Cookbook breakfast recipe	51
Figure 31 Parent Instructional Cookbook lunch recipe	52
Figure 32 Parent Instructional Cookbook snack recipe	53
Figure 33 Child Instructional Cookbook breakfast recipe	54
Figure 34 Child Instructional Cookbook lunch recipe	55
Figure 35 Child Instructional Cookbook snack recipe	56
Figure 36 Parent Instructional Cookbook shopping list	57
Figure 37 Instructional Cookbook Scenario	58

SUMMARY

According to *The Future of Children*, increasing rates of low nutritious food, energy dense, high caloric, consumption among children is one of the many causes leading to serious health risks of children get older (Daniels, 2006). This research focuses on how designing of a system that can promote healthy eating by guiding parents to educate and instill healthy eating habits in their preschoolers ages 3-5 at home. Some known causes of unhealthy eating habits and current methods promoting healthy eating are used to brainstorm a product concept: A parent cookbook and child cookbook. The concept is then used as an interviewing tool. Interviews and questionnaires are conducted with parents of preschoolers to understand their decision making related to food consumption and what rituals they are accustomed to, and their expectations in order to design an effective set of cookbooks. Qualitative data guides the discussion of concept refinement and the proposition of a product as one prevention method.

CHAPTER 1

INTRODUCTION

Background

The purpose of this study is to develop a system that guides parents in promoting healthy eating habits in preschoolers ages 3-5. Obesity is “the fastest-growing, most threatening disease in America today” (Crosson, Kessler, & Rosenstock, 2006) according to the U.S. Surgeon, General Richard Carmona. Therefore, prevention is crucial. The parent’s knowledge of healthy eating habits is the foundation for implementing healthy eating behavior. Parents play a crucial role in the child’s environment as they decide what, when, and where to feed the child. The child’s role is to decide what and how much to eat (Gortmaker, Kim, Lindsay, & Sussner, 2006).

It is recommended by many researchers and experts who have published work in databases such as *The Future of Children* and *Journal of Nutrition Education and Behavior* to teach children healthy eating habits during the preschool years. It is beneficial because “Food habits that develop during childhood are maintained as children enter school, and the dietary choices of elementary school-aged children track into adolescence” (Matheson, Spranger, & Saxe, 2006). Preschoolers can establish healthy eating behavior to minimize the chances of obesity and cardiovascular diseases that follow as they get older. The home is also an environment to focus on because it is a place where preschoolers’ habits are first shaped (Donahue et al., 2006). Not only is it a place where children develop eating habits from watching their parents, but there is also a link between the types of food available in the home and a child’s weight (Gortmaker et al., 2006). Therefore, prevention starts at home.

This paper will be focusing on healthy eating as one aspect of a healthy lifestyle. Adapted healthy eating guidelines for preschoolers, as outlined by *The ABC's of Growing Healthy Kids* (2006), *Feeding Your Child* (2007), and Gortmaker et al. (2006):

- Eat together during a meal or snack
- Introduce new foods along with foods they like
- Don't use food as a reward
- Offer food high in nutrition content
- Limit juice to 4-6 oz. a day
- Offer low fat dairy products
- Minimize the use of high fat and high sugar ingredients
- Provide reasonable portion sizes
- Clean plates should not be enforced

A system that is easy to use, engaging, and applicable for both parent and child will be developed through research, brainstorming, designing, and conducting interviews and questionnaires. The contents of the system will focus on promoting healthy eating habits by guiding parents about healthy eating and encouraging children's involvement in the food they eat. There will be a discussion on how the idea of cookbooks emerged in the design process. This paper will illustrate how the proposed concept can work as one preventative approach.

To refine the design and content of the cookbook concept, two methods of research will be used involving parents of preschool children. The first is a questionnaire consisting of basic background questions as well as questions regarding decisions made related to food. Following the questionnaire will be an interview about the final concept's format and content. The interview will probe for ask what types of recipes are used and what makes those recipes healthy. The study will be conducted in individual sessions.

Data collected from the questionnaires and interviews will be used to discuss how the cookbook concept can be refined. The paper will conclude with the proposal of a product and define its purpose.

CHAPTER 2

LITERATURE REVIEW

Known Causes of Unhealthy Eating

Obesity is a major public health issue that is prevalent among many preschool children.. According to American Heart Association, one in four preschoolers is now considered obese (French et al., 2006). Childhood obesity leads to health risks such as heart disease, diabetes 2, high blood pressure, and high cholesterol (Donahue et al., 2006). A balance of foods high in nutrition (whole grains, fruits and vegetables, low-fat and nonfat dairy products, beans, fish, and lean meats from the dietary recommendations set by the American Heart Association) and physical activities can prevent these health risks. But an imbalance of energy dense, high caloric foods such as soft drinks, chips, and other foods with high fat content along with a sedentary lifestyle can raise the risks (Donahue et al., 2006).

In the social/cultural environment, preschoolers are directly affected by their parents and others around them. Sixty percent of mothers with preschool children work (French et al., 2006). One study has shown an increase of parent's dependence on fast food, which is high in fat and sugar, because of its convenience (Bouck et al., 2006). Low social-economic status of families affect the types of food brought to the home due to tight monetary budget and low education levels of parents (Grier & Kumanyika, 2006). Television shows and commercials aimed at young children can also influence what they want to eat (Donahue et al., 2006).

Another cause of unhealthy eating habits is the limited knowledge that parents have about healthy eating. The results from one study, *Preschoolers' Dietary Behaviours: Parents' Perspectives*, conducted in the UK reveal the need for parents to be educated in nutrition in order to teach their children about healthy eating (Bouck et al.,

2006). Many of them were teaching bad habits without realizing it. The parents in the study agreed that nutritious eating is very important for their preschoolers. They also agreed parents need to be educated in order to teach their children healthy eating behaviors. Constant exposure to fast food leads to a child's preference for these foods (Bouck et al., 2006). According to a survey conducted between 1999-2000 by the National Health and Nutrition Examination Survey, NCHS, and CDC, the majority of vegetables consumed by children were fried potatoes. Only twelve percent of the grains consumed were whole grain ("Childhood Obesity," n.d.). A variety of vegetables and whole grains are important to a person's diet because of the fibers and many other nutrients they contain. Additionally, the USDA has discovered a low intake of calcium, potassium, fiber, magnesium, and vitamin E ("Dietary Guidelines," 2005) among children. Low intake of these nutrients can increase risks of chronic diseases and low bone mass (*Food Groups to Encourage*, 2005).

Meal portions have greatly increased over the past thirty years which has lead to increased food consumption (North et al., 2005). The distortions of meal portions can be seen in today's food packaging, restaurants and even on our own dining room tables. One study has shown that people rely heavily on visual cues and using their eyes in deciding how much to eat, rather than relying on their stomachs (North et al., 2005). For example, many people decide to stop eating when the bowl is empty. Instead of using their stomachs as a means of how much to eat, they use their eyes. Uncertainty of what a serving size looks like can also lead to larger portions, causing people to eat more of the large portions(Critser, 2003). Additionally, larger portions teach them that feeling stuffed is equated to feeling satisfied and therefore people become unable to regulate their food intake (Gortmaker et al., 2006).

Juice consumption has also been linked to obesity. With juices labeled as one hundred percent fruit juice, it seems like an appropriate choice for parents trying to give their children healthy food.. One study, however, has concluded that preschoolers

drinking more than twelve ounces of juice a day have a greater chance of being overweight (Gortmaker et al., 2006).

Picky Eaters

Pressuring children can discourage them from trying new foods. Children will more likely eat foods given to them in a positive context (Gortmaker et al., 2006). Feeding nutritious meals can have its many challenges. At this stage in a preschooler's life, it is not unusual to have picky eaters because as they use their senses, "young children are much more attuned to the textures and smells of foods than are adults (David & Galinsky, 1988, p. 189). It is not unusual for them to reject certain foods or eat small amounts every two to three hours (David & Galinsky, 1988). Bribing kids with a choice of unhealthy food as a reward for eating their meal is a negative approach that many parents are guilty of. Snacks, beside meals, should serve as mini meals when preschoolers are hungry ("The ABC's of Growing Healthy Kids," 2006). It is not a time to be consuming food low in nutrition content such as chips and sweets. Restricting certain foods, however, can have negative effects with an increased preference for them (Gortmaker et al., 2006).

Prevention and Intervention Programs

Although there has been a lot of research on interventions and prevention of obesity, this area still lacks data. Parent-based, family-based, and school-based interventions are different approaches currently used for finding a solution to the obesity epidemic. Studies have shown that focusing primarily on the parents or involving them in intervention or prevention process has had more success (behavior changes) than programs involving just children (Okely, 2007). Surprisingly very few studies have focused on early childhood intervention (Campbell & Hesketh, 2007). Future interventions should work not only in a school or health care setting but also other environments (Gortmaker et al., 2006), allowing it to be more flexible for people.

Current Methods that Promote Healthy Eating Habits

In order to propose an effective system, methods and recommendations from different resources were examined. Some of the gained insights were used to brainstorm ideas.

Websites

There are many programs with information available to the general public. The National Heart Lung and Blood Institute, for example, has a “We Can” program for kids. They provide information on ways to reduce fat and sugar content in food preparation, visual examples of what a serving looks like, the [Go, Slow, Whoa] chart on the different types of foods that can be eaten, and other healthier food choices and alternatives. WIC, USDA, CDC and other programs and organizations have health information on their websites available to the general public. There is not enough research to determine how effective they are but health information is in abundance. (ADD CHART)

Gardening

Growing gardens in public schools has been successful in encouraging children to eat healthier. Alice Waters is one of many around the country promoting the approach. She started a program at a local middle school in Berkeley, CA. The idea was to feed the students what they grew. Students were involved in growing, harvesting, and preparing healthy dishes with vegetables from garden they tended. Learning to grow, harvest and prepare meals with fruits and vegetables proved to increase fruit and vegetable consumption among the students but most importantly it got them excited about eating healthy (Crane, 2003). The key in this program was child involvement.

Products

Games, cards, books, and movies out in the market can be used by parents to teach kids healthy eating. One example Chickin Feed, allow children to visually see what they ate that day from the different food groups and help them see what they need to eat more of. Parents have access to magazines such as *Parent*, *Cookie*, and *Wondertime*

containing articles pertaining to their child's health, including recipes and fun activities. Cookbooks for parents with small children are also readily available such as *C is for Cooking: Recipes from the Street* which contains simple recipes that parents can cook and tasks that kids can do. There are also storybooks that explain to kids how their body works and how they can stay healthy. Two good examples are *Eat Healthy, Feel Great* by William Sears et al. and *Good Enough To Eat* by Lizzy Rockwell. Pictures in the books illustrate healthy eating stories and can be explained with the help of a parent.

A Preschooler's Learning Behavior

Teaching preschoolers about healthy eating through their daily experiences might be more successful than focusing on teaching them about the food groups (Matheson et al., 2006). Another method is teaching about nutrition with the use of stories related to food (Geiger, 1999).

Preschoolers enjoy imitating others. They also enjoy repetition, familiarity, imagining, parent's participation and helping. They are curious about the world they live in and everything in it. A preschooler's dominant activity is play. With their curiosity, they learn best through the use of all their senses (Elkind, 2007).

Design Opportunities

Information from the literature review emphasized a need to educate parents by emphasizing nutrition and portion information, and showing them there are healthier alternative methods to healthy eating. Another important point from the readings was importance of understanding how children learn best, by having fun and getting involved. These insights created design opportunities by guiding design concepts discussed in the next chapter.

CHAPTER 3

DESIGN EXPLORATION

Instructional Cookbook Concept

The research has identified a need to develop a product that guides parents in promoting healthy eating habits in preschool-aged children (ages 3-5). Through brainstorming exercises, various products were considered including:

- Plate systems: color/image or size of plates to encourage variety and portions
- Books: a set of mini books containing different stories of children eating a certain type of food with a recipe at the end of it.
- Gardening: miniature indoor/outdoor gardens, along with a recipe book using the vegetable or fruit planted.
- Software: a combination of games and stories about the benefits of eating a variety of foods and picking a recipe at the end.
- Games: played during a meal to encourage children

Ultimately, the instructional cookbook format was chosen. A cookbook is a familiar item in the kitchen and has several benefits, it can hold various content and, is easily accessible for both parents and children. The instructional cookbook is inspired by a similar education tool: The teacher's guidebook and the student's workbook from a classroom setting. It was inspired by the education tool because a guidebook guides the teacher with information and ideas they need to teach. The child learns by listening and completing activities. The instructional model promotes families eating, shopping and planning meals together, which encourages preschoolers to be more involved in meal preparation and the dining experience. It allows them to be a part of something that they can feel proud of ("The ABC's of Growing Healthy Kids," 2006). "Nutrition education can really work when concepts are practical and applied, emphasizing skills such as

shopping, label reading and cooking. Kids who are on their own for meals can immediately translate their nutrition knowledge into healthy eating behaviors”(Evers, 2006, p. 18). An instructional cookbook will encourage and establish this healthy relationship to food. Similar to the education mode, cookbook product consists of two separate books one for the parent and one for the child. This format allows them to use the books together or separately, but most importantly, makes the child feel more independent and involved. The generative idea behind the books is to give parents creative ideas for meal preparation and to encourage participation with their children, which then can be applied to other recipes outside the book.

Brainstorming

The literature review brought to light two key opportunities: the involvement of both parent and child, and to make food fun. Insights from the literature reviews were organized into three groups:

- Encourage Healthy Eating (methods)
- Need for Informing Parents About Nutrition
- Need for Informing Parents About Portion

These were then listed and numbered. Meanwhile, research into consumer products related to healthy eating such as cookbooks, storybooks, videos, games, and toys were evaluated using the insights list. The cookbook and website had the most potential based on the number of insights they met. With that in mind, ideas were sketched out in two groups, parent and child. The purpose for this initial separation was to encourage exploration without setting too many limits. It was also assumed that parents would be informed about healthy eating habits differently from children. The subcategories under parent were nutrition information, efficiency, portion, and pleasant. The subcategories under child were learning and fun to eat. With ideas from sketch development along with the inspiration from some existing products from, systems were explored. Next, scenarios were drawn out like a flow chart to evaluate the components that work best

together. This way, as one scenario continued into other scenarios, the variations made it easier to assess which parts of the system would be most adaptable. One scenario starts out with a parent, Sally, sitting at her office desk and thinking about what to feed her child, Molly. Meanwhile Molly, at home, is also thinking about what she wants to eat and looks at her cookbook. She has a set of wooden toy food that comes with the cookbook. She decides the recipe and uses the toy food to illustrate what she wants. When Sally comes home, Molly shows the toy food. Sally prepares the meal and feeds Molly. From this initial scenario, others were built around it. The main focus of these scenarios was the interaction and involvement between parent and child while making food decisions at home or grocery store. The scenarios and mockups were created to get a better understanding of how the system could work.

Initial Mockups

The purpose of the initial mockups was to explore different mediums, from paper to software and was focused on the child's involvement in planning the recipe and choosing from a variety of foods.

Mockup One

It starts with a mini counter with four drawers. Each drawer is color coded to represent one of four food groups and in each drawer contain puzzle pieces with food images. The child creates a complete meal by putting together four pieces from each food group. This is done on top of the counter containing a reader. It wirelessly connects to the computer and puts a shopping list together which then can be printed out and taken to the grocery store.

Mockup Two

This concept introduces a separate parent recipe book and a child's recipe book. Contents in the child's book contain a chart with ingredients placed in the appropriate food groups. A removable piece, picture of the main dish, can be placed on a plate

containing a reader. The plate is wirelessly connected to the computer and the software makes a grocery list. When it's cooking time, turn the main dish piece over and a list of tasks are available.

These concepts were inspired by children's kitchens such as the Complete Cook 'n Learn Interactive Kitchen Set which uses sensors in toy food to interact with the kitchen.



Figure 1 Complete Cook'n Learn Interactive Kitchen Set from Little Tikes

From these, it became clear that the more interaction a parent has with the child during the planning of recipes, purchasing ingredients, preparing the meal, and eating, the stronger the system could become. The system is a guide and therefore relies on the willingness of the parent to initiate the different tasks. When the parent uses the tool, they will learn that children can eat the same foods adults eat, the importance of serving sizes and balanced intake of food, the benefits of getting their kids involved, and that food can be introduced in a creative manner. When the child uses the tool, they will have fun with the food, feel ownership and pride for the food they eat, and understand the importance of eating a variety of healthy food.

Refinement of Mockups

The later mockups focused on a cookbook format. There were some reasons for leaning favorably toward the form of a cookbook. The previous mockups contained too many unnecessary parts using cookbooks, toys and the computer. It also reduces the valued interaction between parent and child. The mockups are more complicated than they should be. Simplifying the system gives more freedom to do things differently and creatively. A cookbook format allows the parent and child to work together side by side in the kitchen. It also allows the child to feel more independent with their very own book.

In this design phase, color coded symbols to represent food groups, symbols, different backgrounds, and composition were explored. Initially, the child's book worked more like a recipe card/shopping list but it continued to evolve. Once the concept became an instructional cookbook, illustrations of children doing the tasks were added along with a shopping list children can take to the store. Illustrations from children's cookbooks and storybooks were observed for color, lines, and composition. The goal was for simple images with effective communication telling a story.

Content

The covers of the two books are identical except for one being labeled "parents." The decision for keeping the same covers was to emphasize to a child that their recipe book is the same as a parent's, and they have an important role in planning and preparing the meals.

Parent Cookbook

The parent's component of the instructional cookbook is formatted as follows: The content of the parent's cookbook includes an introduction, age appropriate skills, healthy eating habits definition, food groups and serving size, a "Go, Slow, Whoa" chart, food substitution, and recipe pages. The introduction contains information on why it is important to teach children early and also about the general nature of preschoolers.

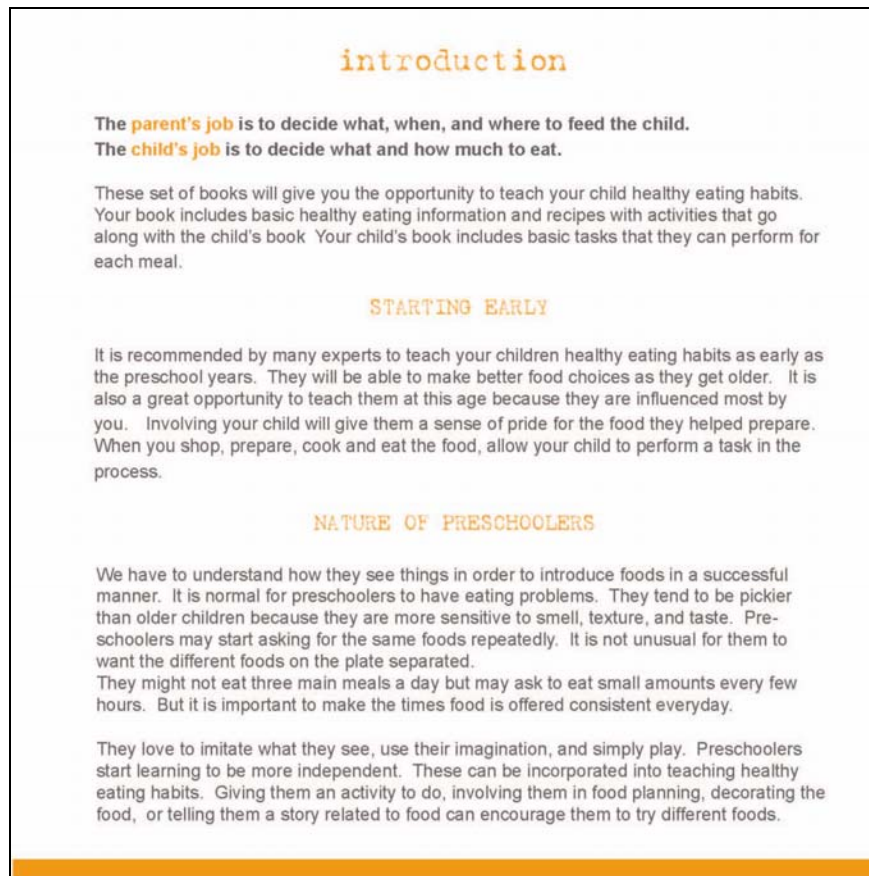


Figure 2 Introduction page

The age appropriate skills page, from WIC or Women, Infants, and Children (provides nutrition programs for women, infants and children), informs parents with a list of kitchen skills their kids can perform.

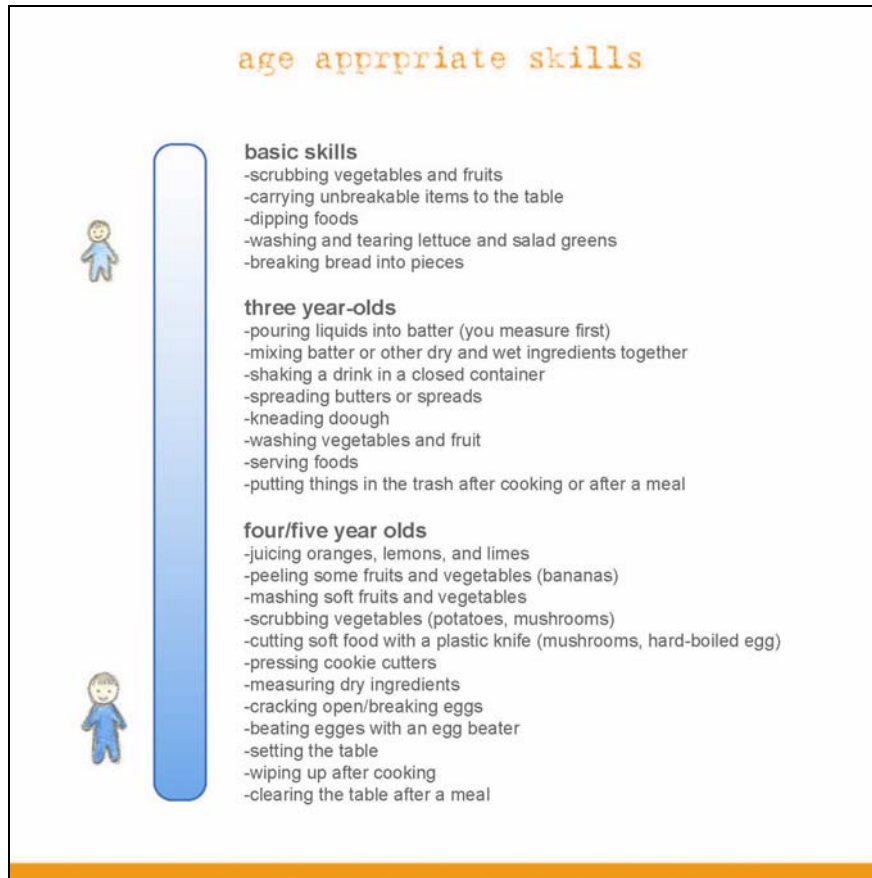


Figure 3 Age appropriate page adapted from WIC

The next page contains the healthy eating habits definition listed out clearly and listed in a certain order: the way food should be eaten, and what and how much food should be served.

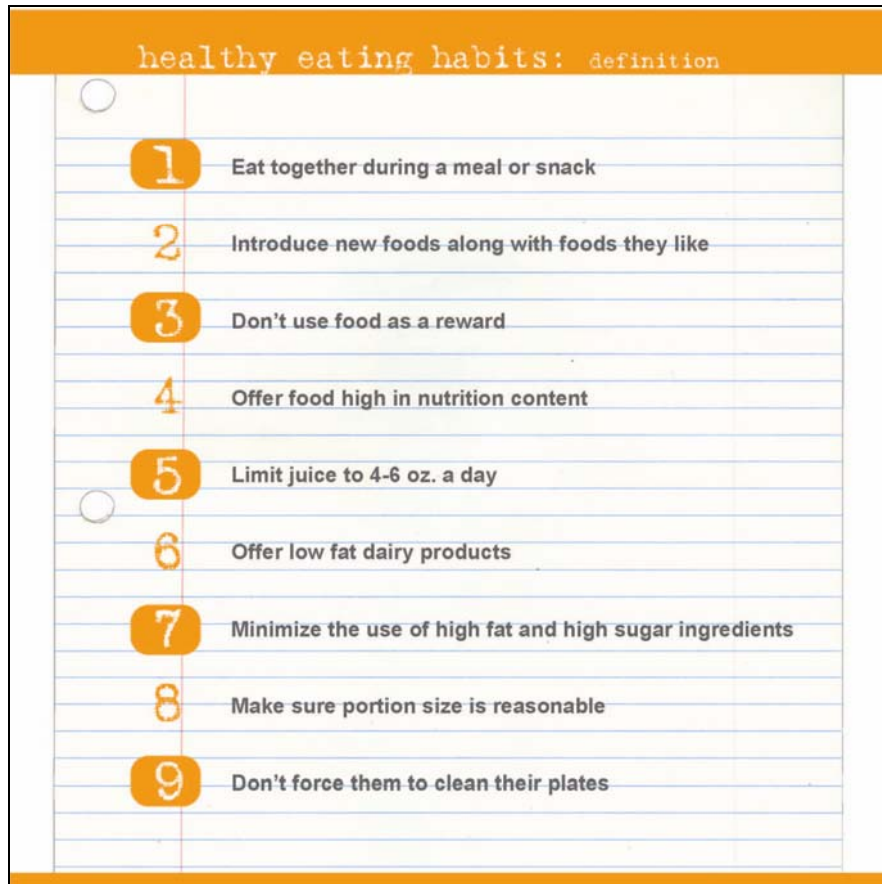


Figure 4 Healthy Eating Habits definition page

Next is the food groups page and it contains an image of a plate with color coded food groups and serving sizes. The plate was inspired by the Eatwell Plate produced by Food Standards Agency in the UK.

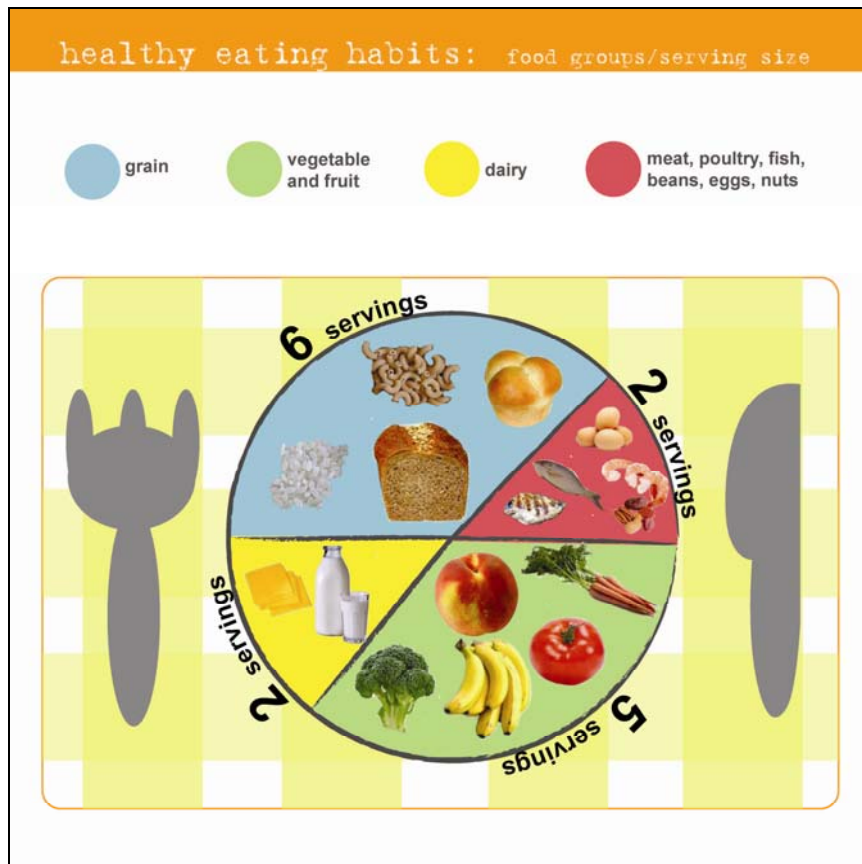


Figure 5 Food group and serving size page

Following this page is a serving size guide. The chart, from WIC (Women, Infants, and Children) allows parents to get an idea of how much a serving is from common foods such as cereal, vegetables, cheese, and meat. A visual measurement guide is located at the bottom of the page, allowing the parent for example to know what one cup would like instead of using a measuring cup.

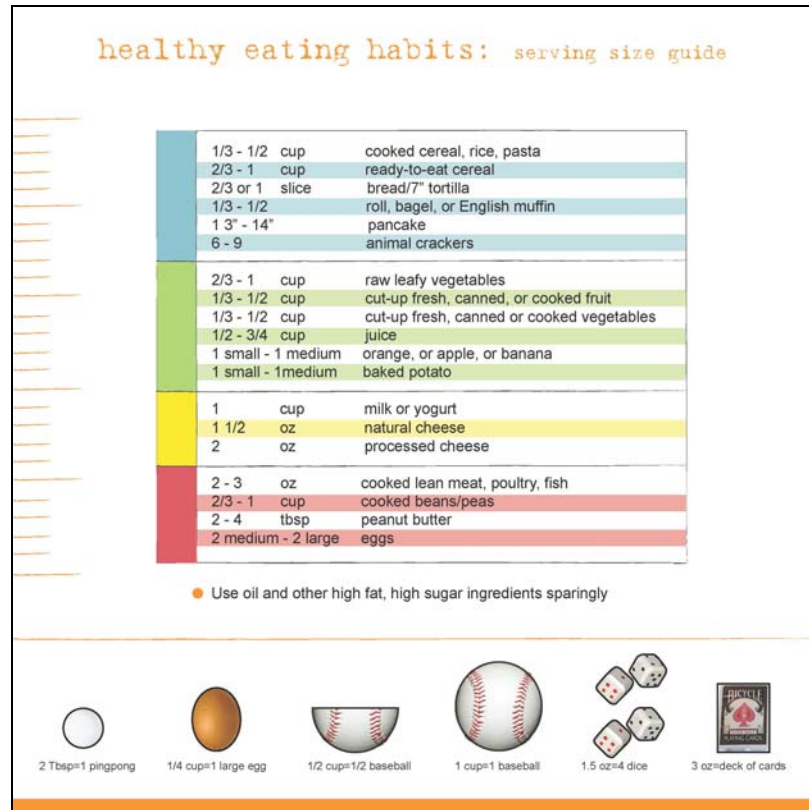


Figure 6 Serving size guide page adapted from WIC

The “Go, Slow, Whoa” chart and food substitutions chart from the “We Can” program run by the National Heart Blood and Lung Institute, give parents information on ways to eat healthier.

healthy eating habits: go, slow, whoa			
	GO (almost anytime foods)	SLOW (sometimes foods)	WHOA (once in a while foods)
	Whole-grain breads, pita, tortillas, pasta Brown rice Hot and cold unsweetened whole-grain breakfast cereals	White refined flour bread, rice, and pasta French toast, taco shells, cornbread, biscuits, granola, waffles and pancakes	Croissants, muffins, doughnuts, sweet rolls, crackers made with trans fats, sweetened breakfast cereals
	Almost all fresh, frozen, and canned vegetables without added fat and sauces All fresh, frozen, canned in juice	All vegetables with added fat and sauces, oven-baked french fries Avocado 100 percent fruit juice, fruits canned in light syrup, dried fruits	Fried potatoes, other deep-fried vegetables Fruits canned in heavy syrup
	Fat-free or 1 percent low-fat milk Fat-free or low-fat yogurt Part-skim, reduced fat, and fat-free cheese Low-fat or fat-free cottage cheese	2 percent low-fat milk, processed cheese spread	Whole milk Full-fat American cheddar, Colby, Swiss, cream cheese, whole-milk yogurt
	Trimmed beef or pork Extra lean ground beef Chicken and turkey without skin Tuna canned in water Baked, broiled, steamed, grilled fish and shellfish Beans, split peas, lentils, tofu Egg whites and egg substitutes	Lean ground beef, broiled hamburgers, ham, Canadian bacon, chicken and turkey with skin, low-fat hot dogs, tuna canned in oil Peanut butter, nuts Whole eggs cooked without added fat	Untrimmed beef and pork, regular ground beef, fried hamburgers, ribs, bacon, fried chicken, chicken nuggets, hot dogs, lunch meats, pepperoni, sausage, fried fish and shellfish Whole eggs cooked with fat
	Vinegar, ketchup, mustard, fat-free creamy salad dressing, fat-free mayonnaise, fat-free sour cream	Vegetable oil, olive oil, oil-based salad dressing, soft margarine, low-fat creamy salad dressing, low-fat mayonnaise, low-fat sour cream	Butter, stick margarine, lard, salt pork Gravy, regular creamay salad dressign, mayonnaise, tartar sauce, sour cream, cheese sauce, cream sauce, cream cheese dips

Figure 7 “Go, Whoa, Slow” chart adapted from We Can program

The last section of the book contains the recipes. It includes ingredients placed in four food groups, fun facts, and suggestions for making food more fun for kids. The child’s tasks (written with a different font and color) are listed alongside recipe instructions. Breakfast, lunch and dinner recipes are from Food Network website in their healthy eating section. The snack is from *How to Teach Nutrition to Kids* (Evers, 2006).

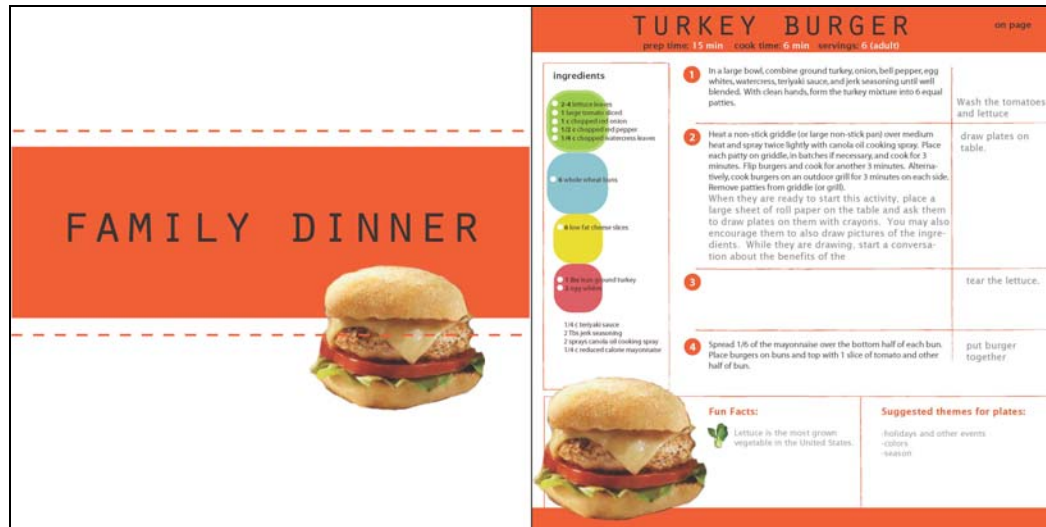


Figure 8 Dinner recipe

Child Cookbook

The Children's component of the instructional cookbook is formatted as follows: The child's cookbook contains an illustrated introduction on how to use the book.



Figure 9 Story introduction

Next is a picture of a balanced plate with the different food groups. For this age group it is to emphasize the importance of variety.

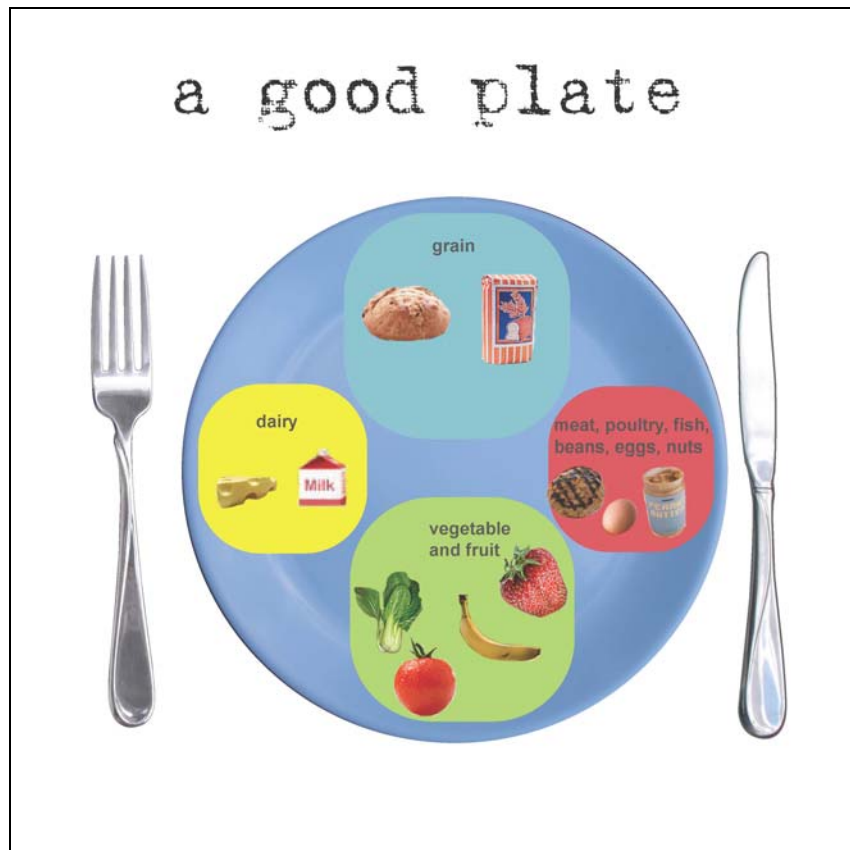


Figure 10 Emphasizing variety

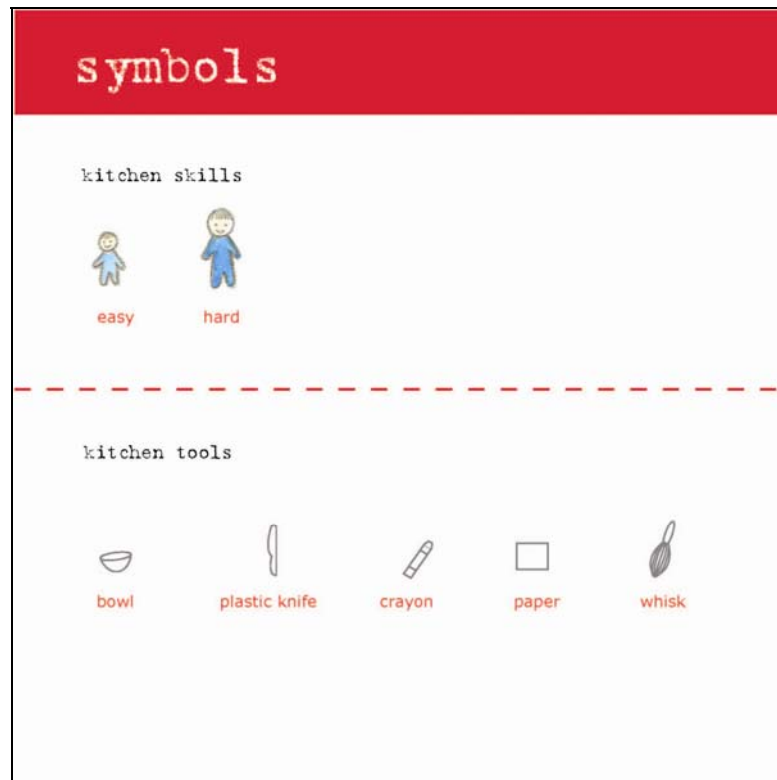


Figure 11 Symbols

A symbols page explains the meaning of images used. The recipes each have large numbers beside each illustration to show an order. The dotted lines linking numbers, lead to the image of a finished dish. The center of the page contains main ingredients grouped in color coded boxes.

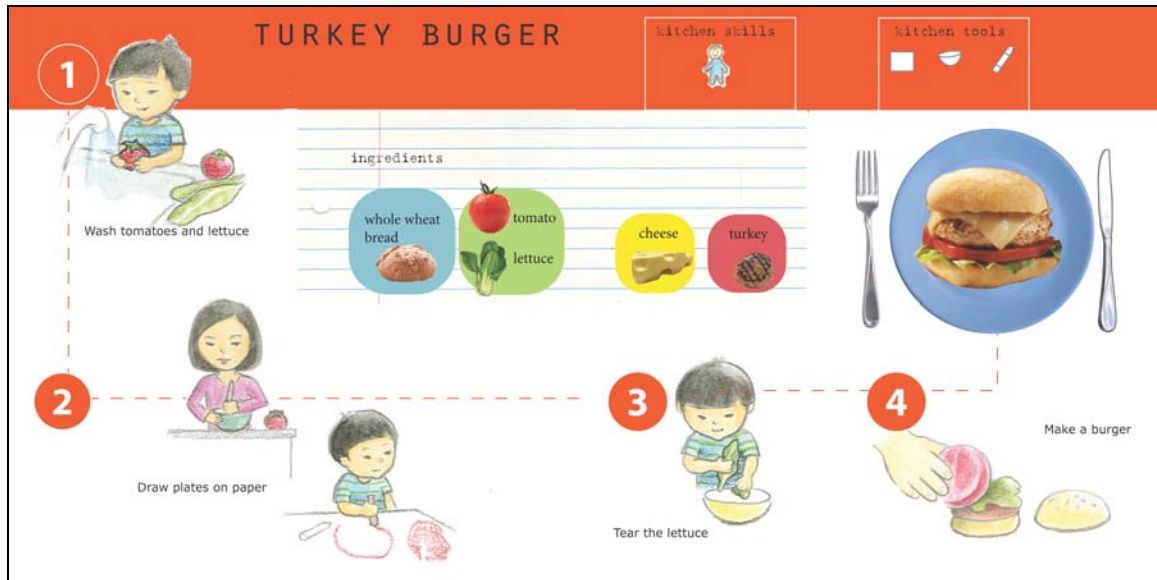


Figure 12 Child's recipe page

The purpose is to introduce importance of eating a variety of foods from different food groups. The larger boxes (grain, vegetable/fruit) will allow a child to be aware of what foods they need to eat more of. Some recipe steps in the parent's instructional cookbook may not be suitable for preschoolers. In the children's instructional book, children will be able to do other activities to keep them involved. The last page contains a list of ingredients in sticker form. These stickers can be transferred onto the shopping list page which will then be taken to the grocery store.

The instructional cookbooks were put together and used as an interviewing tool for insights and recommendations from parents.

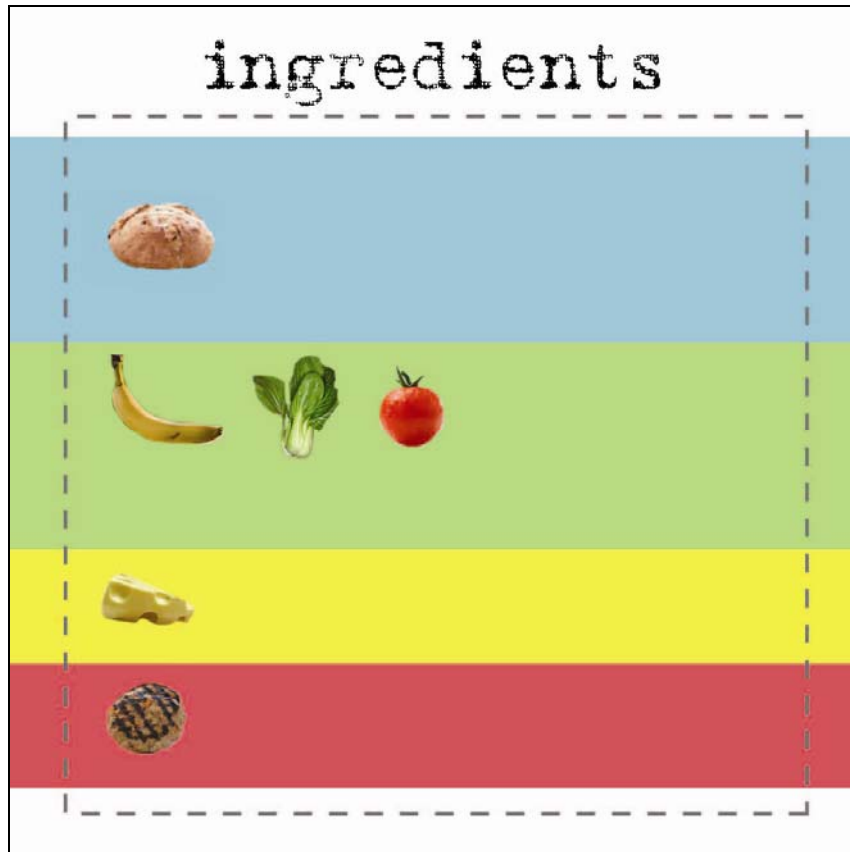


Figure 13 Ingredients page

CHAPTER 4

METHODOLOGY

Research Methodology

In order to better design the system that is applicable in the real world for parents with preschoolers, their needs and concerns need to be applied. It's easy to tell people what to do and how to do it, but ultimately it has to be useful and practical for them. By understanding parents' decisions and experiences, the content of the revised instructional cookbook concept was improved. Questionnaires and interviews were used to collect data. The purpose of the questionnaires was to gain a sense of what the parents are accustomed to doing. The interviews were directly dealing with the books and how it can be more helpful for the parents.

Subjects recruited for the questionnaire and interview included six parents having at least one preschool child. All of the participants were mothers between the ages of 20-40 who work. Five were married and one was single. Their education backgrounds ranged from high school graduates to a master's degree holder. Four of the six moms have other children besides their preschoolers. The studies were conducted individually. First a questionnaire was given to the participants to fill out. The questionnaire contained questions about their background, decisions for food choices, eating habits, resources they use for health information, and how they involve their preschooler while cooking and shopping. Next, the participant was given instructional cookbooks developed by the research team to review. Subjects were then questioned about the books' content, clarity and flow between the two books. The interview also questioned participants about the types of recipes they use and how they make the recipes healthy. Finally, participants were questioned if they would benefit from the cookbooks, and if so, how.

Analysis

After completing the questionnaires and interviews, the data was analyzed. The results of each participant were compared to each other in order to find similarities, differences, and other new insights.

Eating Decisions

It was found a majority of the participants bribe their kids with fun activities or dessert to get them to eat their meals. A few hide the ingredients in the food and one makes fun shapes and pictures with food to encourage her child to eat. Most of the participants eat dinner as a family more often than other meals. Breakfast was next. Nutrition, convenience (time and ease), and taste were ranked the highest in influencing their decisions in choosing a meal to prepare. The healthy eating habits identified as hardest to follow were shown to be: Limiting juice, offering foods high in nutrition content, and serving a reasonable portion size. All the participants use magazines as one of their sources for health information. The magazines mentioned were *Parent. Mother, Working Mother, Woman's World, Parenting, and Good Housekeeping*. Most of the participants also use books and food packaging for health information. A few participants use the internet or ask their doctor or family.

Involvement of Preschooler

A majority of mothers currently involve their preschoolers in meal preparations and their main concern is that some steps may be too difficult for them or too dangerous. When asked about how they involve their preschoolers in planning and preparing a meal, some of the responses were: ask the child what they want to eat, allow them to mix food together, set the table, and find ingredients. Most participants involve their children at the grocery store. One asks their child what healthy foods they'd like by giving them healthy choices. Another has their child make a shopping list with pictures and ask them to locate ingredients at the store.

Instructional Cookbooks

When asked about the main benefit of the instructional cookbooks, the participants felt it was about involving children, helping parents make smart choices with their children, giving parents ideas and helping kids understand the process of making a meal. On the question of whether there were important messages missing, one participant said that explaining to a child how the body works was important to add. Another said that there needs to be information on calories and the nutrition content of a variety of fruits and vegetables. In the parent's instructional cookbook, the most engaging areas were age appropriate skills page, food groups/serving size pages, and recipes. These were most popular because of images and arrangement of content. The recipes were popular by some because the samples shown were simple and quick to prepare. Also, directions had a preschooler's tasks listed next to them. Some of the least engaging areas were the introduction page and pages with various charts.

The participants offered recommendations for improvement in the instructional cookbook. For the introduction page, it was recommended to list content in bullet form, highlighting important words the way magazines do, and add more images. One mother mentioned she doesn't have time to sit and read paragraphs of information. A recommendation for the informational charts suggested adding facts about how food works in the body.

For the children's instructional cookbook, most of the participants indicated the story in the beginning and pictured directions in the recipes would be most engaging for their children.

In order to get an idea of the kinds of healthy recipes they use, participants were asked questions about their current recipes and what makes those recipes healthy. One mother bakes chicken instead of frying it and generally tries to stay away from processed foods. Another adds a side salad to the meal when the main dish does not contain vegetables. All the participants said they include vegetables into their dishes to make it

healthier. The last question they were asked was how they would perceive benefitting from the instructional cookbooks. Most responded it would encourage their kids to be more involved. One mother mentioned that her child always wants to get involved. With the instructional cookbooks, she can get her child busy with something and at the same time keep an eye on her younger children.

CHAPTER 5

DISCUSSION AND CONCLUSION

Discussion

Although these mothers say they involve their children, it is not clear how often. Some mentioned time played a huge factor in their decision making. It may not be realistic for them to involve their children all the time but the goal is encouraging parents to involve them as much as possible, when they can. Many of the participants noted their children would enjoy doing fun activities. Including activities will encourage usage of the instructional cookbooks and give more opportunities for parents to teach their children healthy eating habits. Also learning how participants involve their children confirms the success of including a variety of activities.

With food and activities as top methods used to get children to eat their food, parents can be encouraged to choose activities instead by making it the last step in the parent's and child's book. The last two steps in the child's book could be eating and then offering a fun activity after the meal. Based on participant responses, dinner seems to be a time when families eat most together. Activities for dinner could emphasize family involvement before, during, and after meals.

The study indicates the need to highlight for parents, age appropriate skills. The emphasis of age appropriate skills may give parents more confidence in knowing what their children can do and encourage them to involve their children. Several of the participants noted their liking for the age appropriate skills page which is reflected in their concern that when they cook with their children, some steps may be too difficult or dangerous.

There is a need to emphasize the nutrition value of different vegetables. As noted earlier in the literature review, one survey's results revealed children eat mostly fried

potatoes as a vegetable. One of the participants in this study suggested adding information on nutrition value of vegetables and fruits. Also in the interviews, all the participants said they add vegetables to meals to make it healthy. As nutrition is a major influence in meal decisions, the vegetable nutrition information will encourage variety. As one participant suggested, putting more information about how food works in the body for the child's book, the importance can be validated by studies that have shown preschoolers' understanding of a link between health and food (Matheson et al., 2006). The child's book will be improved by the addition of the relationship between body and food.

As magazines are a common source for participants, it explains the recommendations they gave to improve the cookbook. On the pages with text, some suggested adding more images to make it more attractive to read. Another suggestion was highlighting text the way magazines do to emphasize importance. Information, including the charts, will have more appeal if it includes the benefits to the body. Several of the participants at some point during the interview brought up an interest to information regarding health benefits.

The recipes that participants want are quick and easy to make. Some of them mentioned using recipes with staple ingredients such as milk, eggs, and meat and avoiding recipes with ingredients that are not commonly used by them.

Summary for Refinement

For the child's instructional cookbook, illustrations showing a relationship between food and body should be included. The refined parent's instructional cookbook should include more storytelling illustrations. The information on the charts should also be told as a story and incorporate benefits to the body. A variety of options should be included and highlighted for limiting juice, offering foods high in nutrition content, and serving reasonable portion size as these were some of the harder ones for the participants to follow. This is not surprising because it reflects the picky eater stage. When choosing

recipes for the instructional cookbook, they will go through several filters: Time, ease, and variety of common ingredients. Age appropriate skills should be emphasized more as it emphasizes options for parents. During the preschool stage, parents need assurance and confidence.

Future Studies

For future studies, it would be interesting to see the recipes parents use in order to gather more insightful data by finding the similarities. A participant in the study suggested incorporating physical activities to the cookbook. A relationship between food and physical activities has a possibility of being well represented in the current format.

Conclusion

The purpose of this paper is to develop a product that guides parents in promoting healthy eating habits and encourage the involvement of preschool children. After exploring different design concepts, the cookbook format was chosen. With the current threat of obesity and other health risks among children, this set of instructional cookbooks is one proposed prevention method. The goal of this product is to give parents more confidence in what and how they feed their children, give them the opportunity to teach their children healthy eating, show their children how to have fun with food, and get a conversation started. The instructional cookbook is beneficial for preschoolers because as mentioned earlier in the literature review, they learn best through routine (Matheson et al., 2006) and the use of their senses (Elkind, 2007). Strength of this product comes from utilizing the natural relationship between parent and child.

APPENDIX A

CONCEPT BRAINSTORM

INSIGHTS

ENCOURAGE HEALTHY EATING (methods)

- 1) Parents believe good nutrition is important for their child
- 2) Preschoolers imitate what they see
- 3) Preschoolers learn best through “active learning” that use all the senses.
- 4) Using different colors, shapes, and arrangements of food can make it an enjoyable fun experience for children
- 5) Since preschoolers have limited reading abilities, using visual images can be an effective way.
- 6) Teaching preschoolers about healthy eating through their daily experiences might be more successful than focusing on the teaching of different food groups.
- 7) Children will enjoy foods offered to them in a positive context

NEED FOR INFORMING PARENTS ABOUT NUTRITION

- 8) Most kids eat fried potatoes for vegetable intake
- 9) Snacks beside meals, should serve as mini meals to satisfy the child’s hunger and not “snack” foods

NEED FOR INFORMING PARENTS ABOUT PORTION

- 10) Uncertainty of what a serving looks like can lead to larger portions

Figure 14 Insights List



Figure 15 Brainstorm Domain and Insights 1



Figure 16 Brainstorm Domain and Insights 2

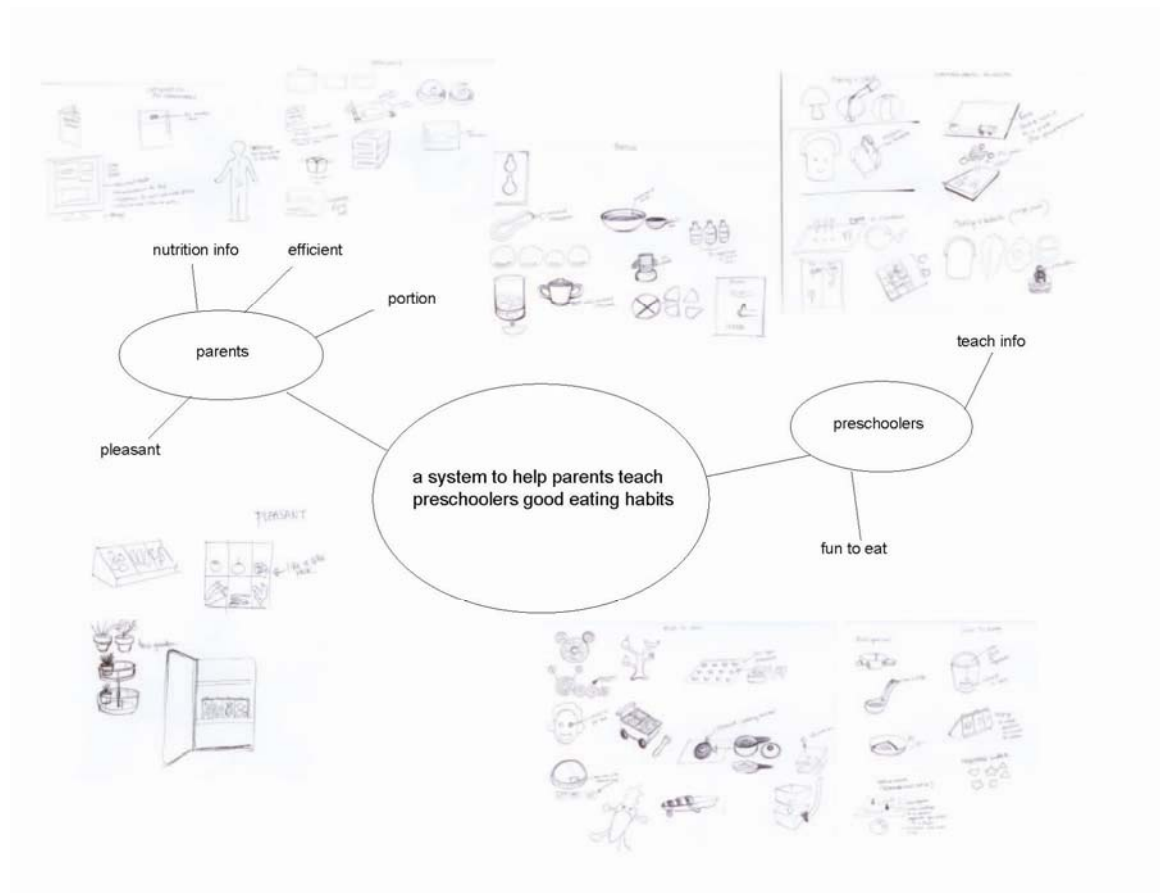


Figure 17 Brainstorm Concept Sketches 1

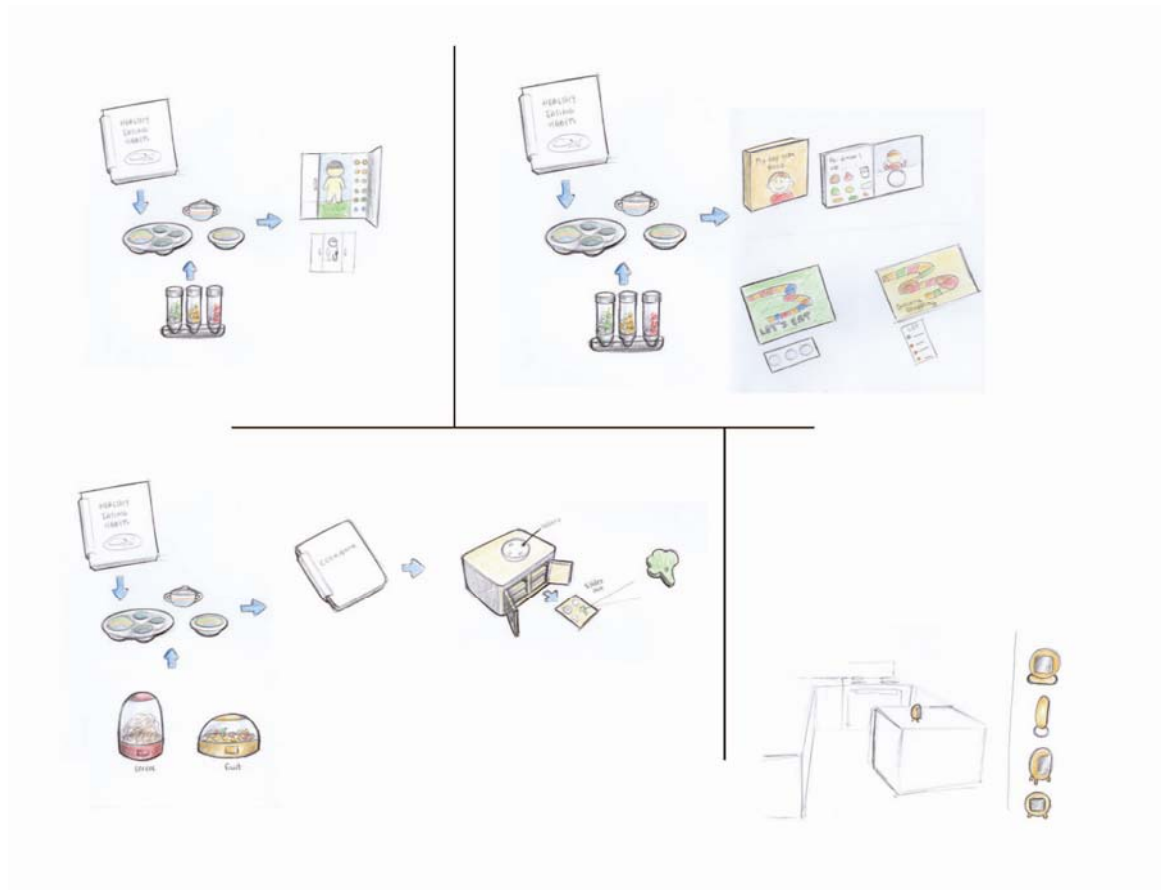


Figure 18 Brainstorm Concept Sketches 2

APPENDIX B
INITIAL MOCKUPS

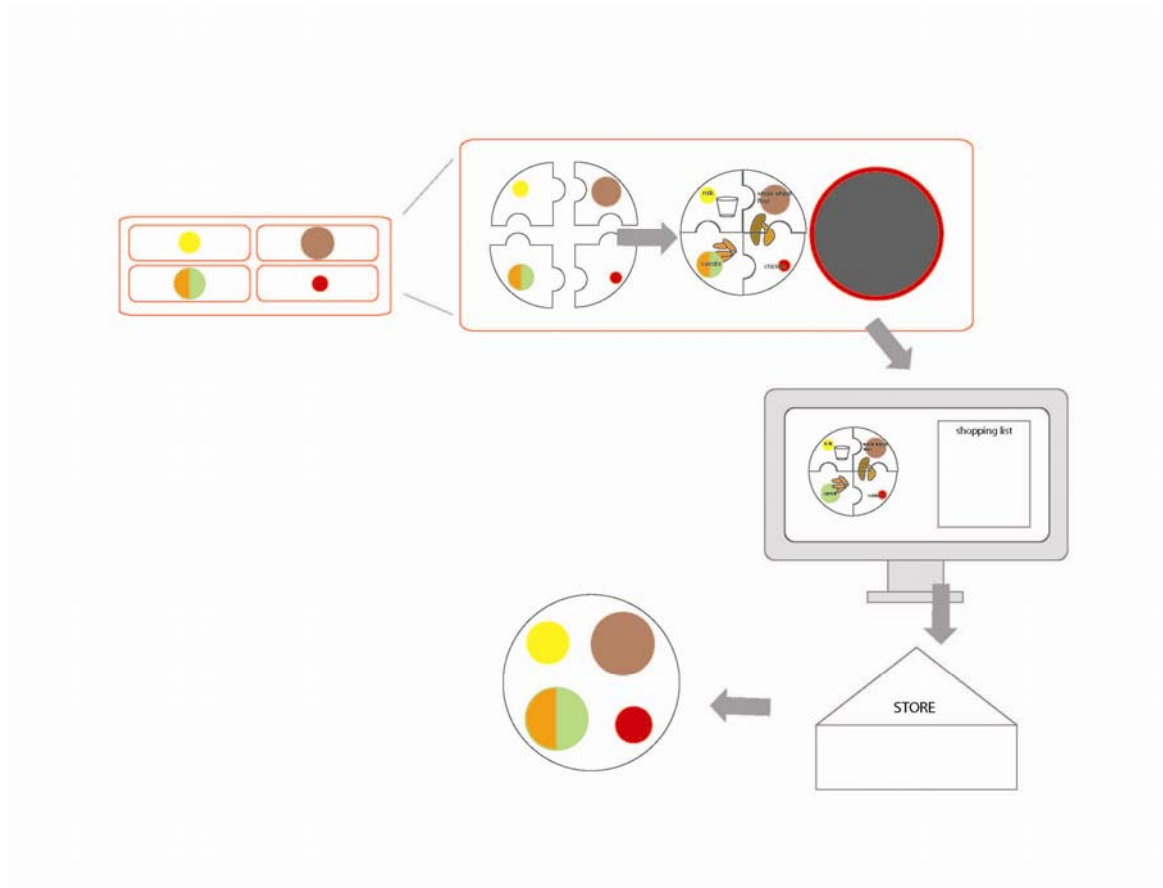


Figure 20 Mockup One



Figure 21 Mockup Two

APPENDIX C
CONCEPT REFINEMENT



Figure 22 Cookbook Concept One

MAIN MEALS: Spaghetti and Meatballs

1 tablespoon olive oil
 1 pound spaghetti
 1 pound extra-lean ground beef
 1 teaspoon salt-free garlic and herb seasoning
 Salt and pepper
 2 (28-ounce) cans diced tomatoes
 6-ounce can tomato paste
 1 teaspoon dried oregano
 1/2 teaspoon crushed red pepper flakes
 1/4 cup torn fresh basil leaves
 1/4 cup grated Parmesan
























































































































































































Heat oil in a large stock pot or Dutch oven over medium heat.

Cook spaghetti according to package directions. In a large bowl, combine beef and garlic and herb seasoning. 1 teaspoon each salt and pepper. Mix well and shape mixture into meatballs (about 16 meatballs). Add meatballs and cook 5 minutes, until golden brown on all sides. Add tomatoes, tomato paste, oregano, and red pepper flakes. Bring to a simmer. Simmer 10 minutes, until meatballs are cooked through. Reserve 1 1/2 cups sauce for another meal. Remove from heat, and stir in basil. Serve sauce over spaghetti. Top with Parmesan just before serving.

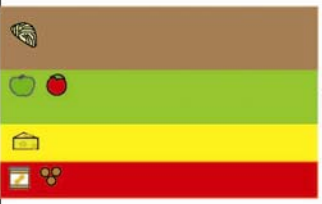
1.5-oz	
1/2 c	
2-3-oz	
1/3-1/2 c	

MAIN MEALS: Spaghetti and Meatballs



1	2	3	4
			
1	2	3	4
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			
			

my food



my shopping list



Figure 23 Cookbook Concept Two



Figure 24 Cookbook Concept Three



Figure 25 Cookbook Concept Four

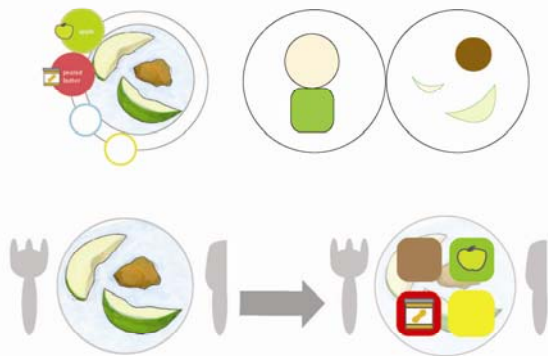
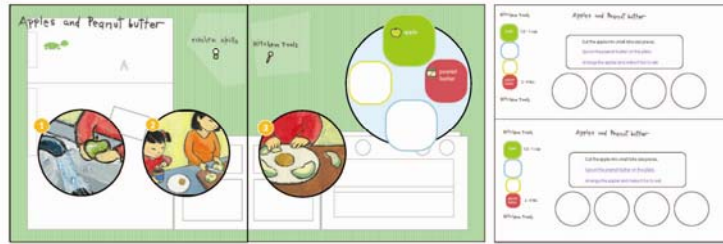


Figure 26 Cookbook Concept Five

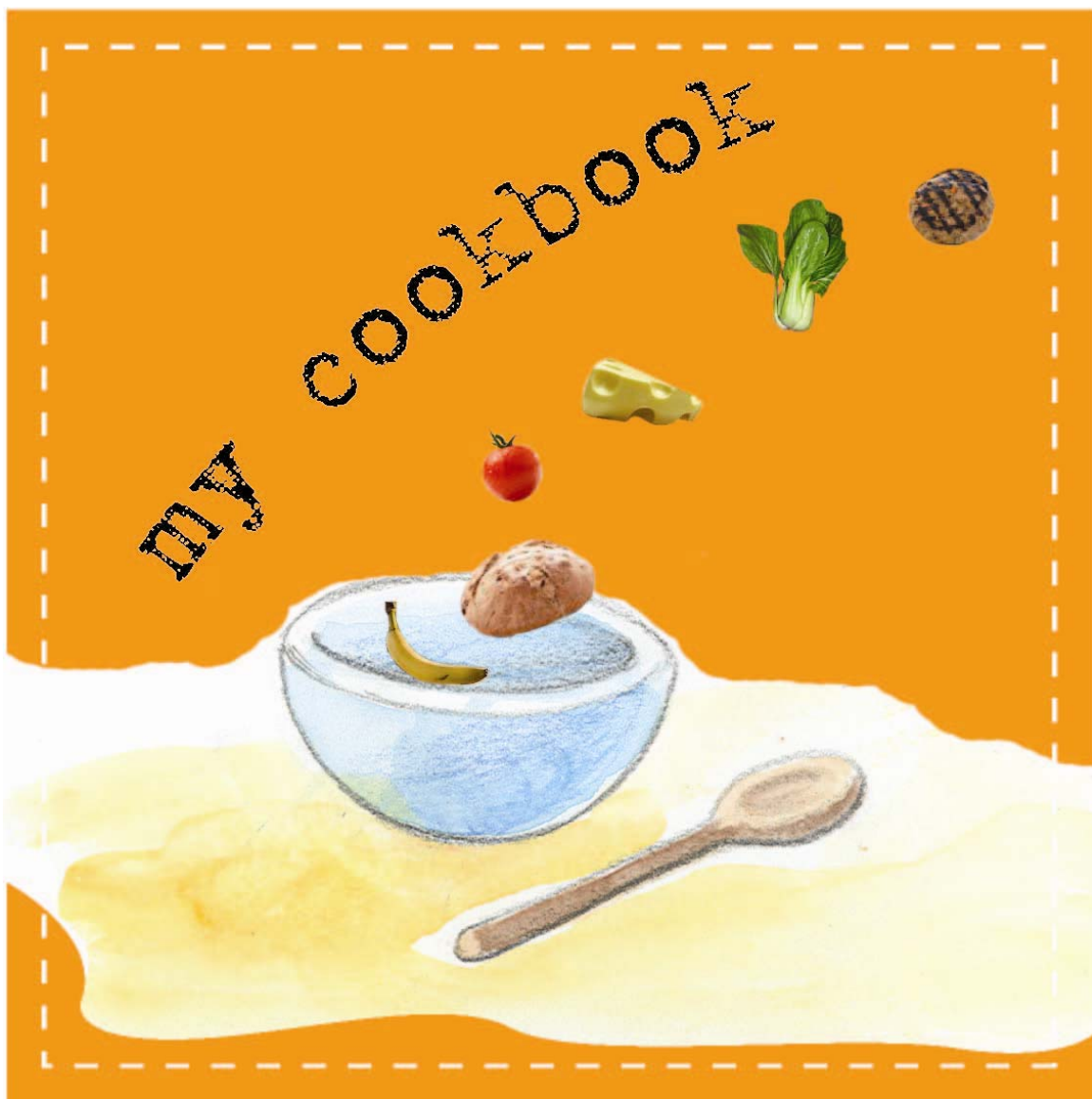
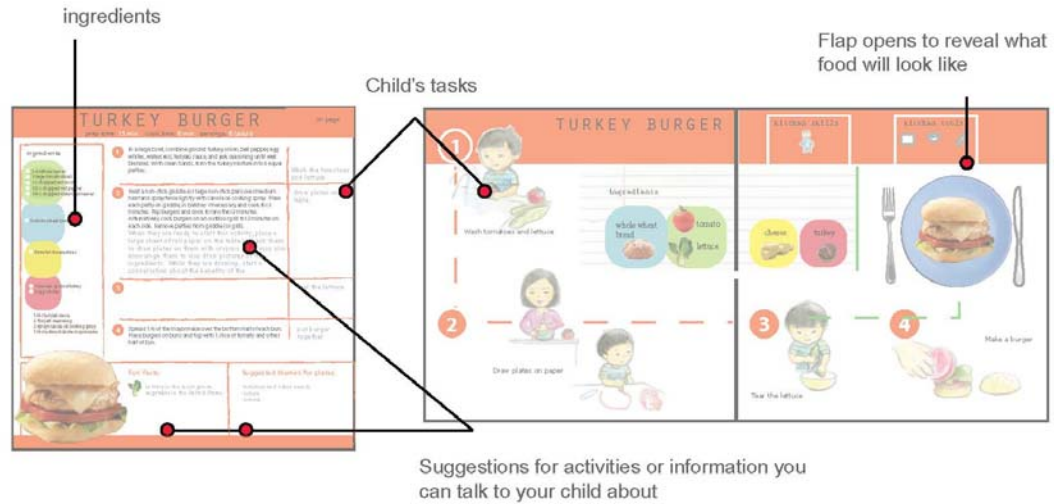


Figure 27 Instructional Cookbook Cover

how to use this book



directions

- 1** Allow your child to help you pick a recipe from their book.
- 2** Look over the recipe from your book to get an idea of what your child will be doing.
- 3** Explain (using their book) to your child what they will be doing.

If the child's task seems difficult for them, encourage them to do a simpler task. see page

Figure 28 Parent Instructional Cookbook directions

healthy eating habits: food substitution

ingredients	substitutions
1 cup cream	1 cup evaporated fat-free milk
1 cup butter, margarine, or oil	1/2 cup apple butter or applesauce
1 egg	2 egg whites or 1/4 cup egg substitute
Pastry dough	Graham cracker crumb crust
Butter, margarine or vegetable oil for sautéing	Cooking spray, chicken broth or a small amount of olive oil
Bacon Lean turkey bacon	Lean turkey bacon
Ground beef	Extra lean ground beef or ground turkey breast
Sour cream	Fat-free sour cream
1 cup chocolate chips	1/4-1/2 cup mini chocolate chips
1 cup sugar	3/4 cup sugar
1 cup mayonnaise	1 cup reduced fat or fat-free mayonnaise
1 cup whole milk	1 cup fat-free milk
1 cup cream cheese	1/2 cup ricotta cheese pureed with 1/2 cup fat free cream cheese

- Instead of frying, try to bake, microwave, boil or broil the food.

Figure 29 Parent Instructional Cookbook food substitution chart



BREAKFAST

PANCKAKES

prep time: 30 min cook time: 20 min servings: 4 (adult: two 5 inch)

on page

ingredients

- strawberries
- 3/4 c all purpose flour
- 1/4 c whole wheat flour
- 1 c low fat buttermilk
- 1/2 c non fat milk
- 2 large eggs
- 1 1/2 tsp baking soda
- 1/4 tsp salt
- 1 Tbs honey
- 1/4 tsp vanilla

Preheat oven to 200 degrees F. Preheat a large nonstick griddle or skillet over a medium-low flame.

- In a medium bowl, whisk together the dry ingredients (flour through salt). In another medium bowl, beat together the eggs, buttermilk, non-fat milk, honey and vanilla. Stir the wet ingredients into the dry ingredients, mixing only enough to combine them. The batter will be somewhat lumpy.
- Use a 1/3 cup measuring cup to ladle the batter onto the griddle or skillet. Flip the pancake when the top is bubbling and it is golden brown on the bottom. Then cook until the other side is golden brown. Give them plastic plates and cups to put on the table.
- Cut the strawberries into smaller pieces. You can encourage them to decorate their strawberries around the plate also.

Pour milk, flour, and eggs in a bowl

Mix it together

Set the table

Put strawberries on top of a pancake

Fun Facts:

Strawberries are the only fruit with seeds on the outside, with an average of 200 seeds.

Other suggestions:

Cut the pancakes into different shapes with cookie cutters.

Figure 30 Parent Instructional Cookbook breakfast recipe

LUNCH

TACO SALAD

prep time: 30 min cook time: 15 min servings: 4 (adult: 1 cup filling, 2 cups salad)

1/2 cup prepared salsa

1 medium onion, chopped

3 cloves garlic, minced

8 cups shredded romaine lettuce

1/4 cup chopped fresh cilantro

1/2 cup shredded sharp cheddar cheese

1 lb (915 g) lean ground turkey

1/4 onion, minced

1 bean, rinsed

1 tsp canola oil

2 tsp cumin

2 tsp chili powder

1. Combine salsa and sour cream in a large bowl.

2. Heat oil in a large nonstick skillet over medium heat. Add onion and garlic and cook, stirring often, until softened about 2 minutes. Add turkey and cook, stirring often and crumbling with a wooden spoon, until cooked through, about 5 minutes. Add tomatoes, beans, cumin and chili powder, cook, stirring, until the tomatoes begin to break down, 2 to 3 minutes. Remove from the heat, stir in cilantro and 1/4 cup of the salsa mixture.

3. Add lettuce to the remaining salsa mixture in the bowl, toss to coat.

4. To serve, divide the lettuce among 4 plates, top with the turkey mixture and sprinkle with cheese.

Wash the tomato and lettuce

Tear the lettuce

Pour salsa over the lettuce and mix together

Sprinkle cheese on top of the taco salad

Fun Facts:

Long time ago, tomatoes were called "love apples."

Other suggestions:


Put in pita pockets.

Come up with a fun name with your child for the dish.

Figure 31 Parent Instructional Cookbook lunch recipe

52

SNACKS



FRUITY FACE

on page

Ingredients

- Banana
- Raisins
- English muffin
- Peanut butter
- Medicine or seeds



1

Peel the banana for them and give them a plastic knife

Slice a banana

2

Make sure the peanut butter is not spread on too thick

Put peanut butter on an english muffin

3

Make funny faces

Fun Facts:

Bananas help your body produce chemicals that make you happy.



Other suggestions:

Use other fruits to make other faces or decorations on the english muffin.

Figure 32 Parent Instructional Cookbook snack recipe

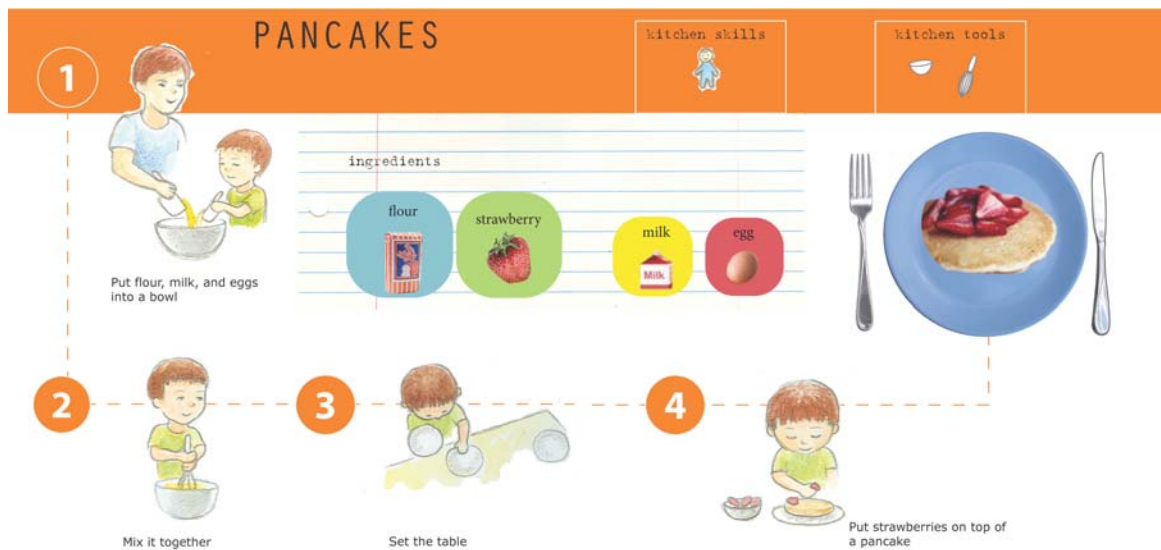


Figure 33 Child Instructional Cookbook breakfast recipe

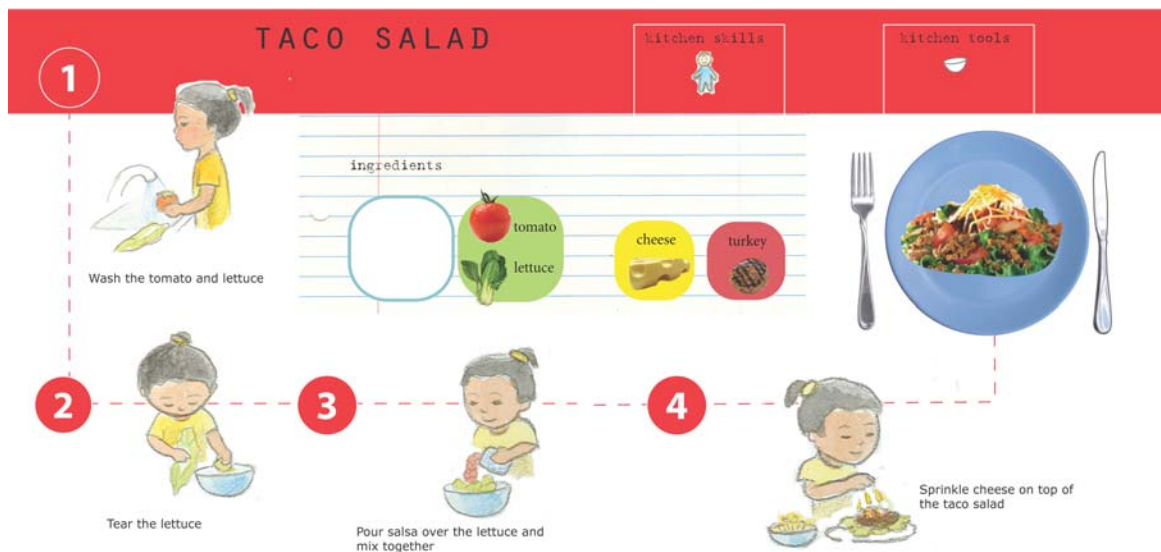


Figure 34 Child Instructional Cookbook lunch recipe

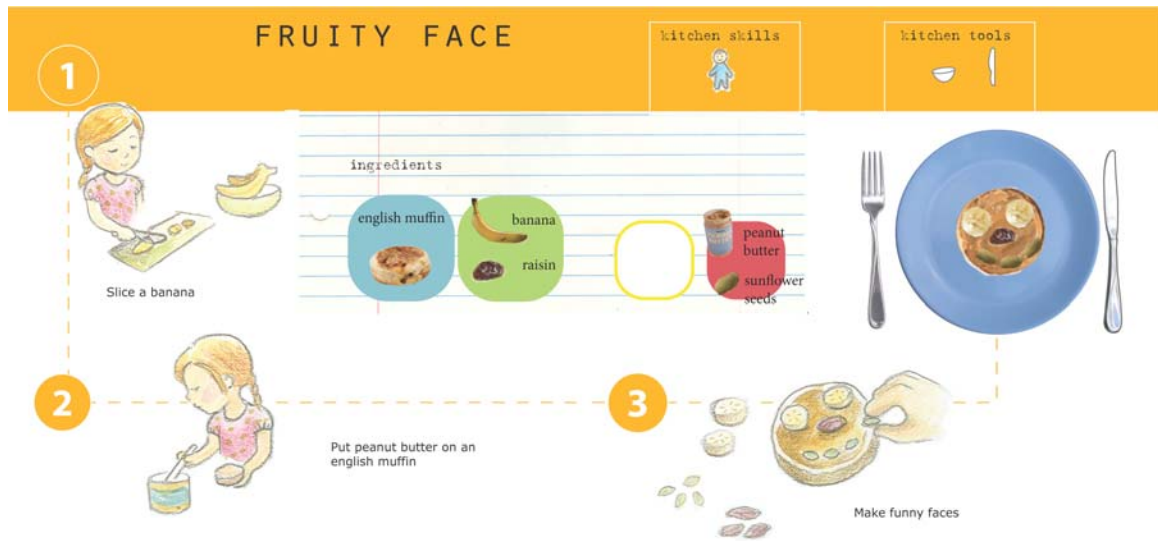


Figure 35 Child Instructional Cookbook snack recipe



Figure 36 Child Instructional Cookbook shopping list



Figure 37 Instructional Cookbook Scenario

APPENDIX D

QUESTIONNAIRE, INTERVIEW CHARTS

Questionnaire For Caregivers:

1. What is your relationship to the preschooler(s)?

☐ Mom ☐ Dad ☐ Day-care caregiver

Extended family (specify): _____ ☐ Nanny

What age group do you belong? ☐ 20-30

☐ 31-40

☐ 41-50

☐ 51- 60

☐ 60+

2. How many preschoolers are there in the household? Please circle one.

1

2

3 or more

Their ages? 3____, 4____, 5____

3. Check the appropriate response.

I am a: ☐ Stay at home mom

☐ Stay at home dad

☐ Married mom, works _____ hours per week

☐ Married dad, works _____ hours per week

☐ Single mom, works _____ hours per week

☐ Single dad, works _____ hours per week

4. What is the highest level of education completed?

☐ High school graduate

☐ College graduate

☐ Masters Degree holder

☐ Other (specify) _____

5. What source(s) do you use to learn about nutrition? (If more than one sources are used, please check the relevant sources and rank them with 1 being the most used source.)

Internet (specify websites) _____
Books (specify) _____
Magazines (specify) _____
Physicians _____
Extended family members (specify) _____
Television (specify shows) _____
Friends/co-workers _____
Food packaging _____
Other _____

6. Do you follow nutrition information to make food decisions?

____ Yes ____ No

7. Do you own a kid's cookbook?

____ Yes ____ No

8. Does the preschooler get involved in preparing the meal?

____ Yes ____ No

9. Are there challenges when cooking with your child? ____ Yes ____ No

If yes, what are the challenges when cooking with your child?

____ They lose interest quickly
____ Not sure how to involve them
____ Concerned that some steps may be too difficult for them or too dangerous
____ Other _____

10. When your preschooler refuses to eat something you've made what method do you use to get them to eat the food?

____ Make fun shapes and pictures with food
____ Hide the ingredients in the food
____ Tell them they will get dessert after they finish
____ Tell them they will get to do a fun activity
____ others _____

11. How often do you eat as a family?

- ☐ Once a week
- ☐ Twice a week
- ☐ Three or more a week

12. Which meal does your family eat together most often?

- ☐ Breakfast
- ☐ Lunch
- ☐ Dinner

13. When choosing a meal to cook, what factor(s) affect your decision? (if there are more than one factor, please rank them in order from most important factor to least important factor, 1 being the most important)

- ☐ Money
- ☐ Taste
- ☐ Convenience (time)
- ☐ Child's food choices
- ☐ Nutrition
- ☐ Other _____

14. Do you take your preschooler with you when going to the grocery store?

- ☐ Yes
- ☐ No

(answer if you replied yes)

Do you involve your preschooler when you shop?

- ☐ Yes
- ☐ No

(answer if you replied yes)

How do you involve them?

15. Please rank the healthy eating information that is hardest to follow and easiest to follow, 1 being the hardest.

____ limit juice to 4-6 oz. a day

____ serve low fat dairy

____ make sure portion size is reasonable

____ don't force them to clean their plates

____ offer foods high in nutrition content

____ minimize the use of high fat and high sugar ingredients

Table 1 Questionnaire Chart

Participants	Relationship to child:status:hrs. work	level of education	#preschooler: age/ #siblings: age	sources for nutrition	child involved in food:challenges	method used when child doesn't eat	times per week family meal: which meals
#1	mom:married:40	highschool	1: 4 / 2: 1,4months	magazines (parent), physician, food packaging	yes: steps difficult or dangerous	fun activity	2:dinner
#2	mom:married:8	highschool	1:4 / 1:6	websites (foodnetwork), magazines (woman's world, parenting, good housekeeping), family	sometimes:none	offer dessert, fun activity	3 or more: breakfast and dinner
#3	mom:married:40	college	1:4 / 1:10months	internet, books, magazines, friends/coworkers, food packaging	yes: steps difficult or dangerous	hide ingredients in food, dessert	3 or more:dinner
#4	mom:married:16	trade school	1:04	internet (holistic moms network), books (whole food recipe book), magazines (mother)	yes: patience	offer dessert, fun activity	3 or more:dinner
#5	mom:single:40	college	1:04	books (cookbooks), magazine (parent, working mother), pediatrician, food packaging (labels)	yes: steps difficult or dangerous, messy	fun shapes and pictures with food, fun activity	3 or more:breakfast, dinner
#6	mom:married:20	masters	1:3 / 1:7	books, magazines (parent), physician, sisters and grandmother, friends, food packaging	no: steps difficult or dangerous	hide ingredients in food, dessert, fun activity	3 or more:breakfast, lunch

1. What is the main idea of these books?
2. Could you verbally tell me how you would use the different parts of the book?

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
Parent book						
Child book						

3. Are there any important information missing?

	Table of contents	Introduction	Age appropriate skills	Healthy eating habits definition	Food group/serving size	Go, slow, whoa chart
Parent book						

	Food substitution	directions	recipe			
Parent book						

	story	plate	symbols	Recipe directions	Shopping list	
Child book						

4. Are there any directions missing?

	Table of contents	Introduction	Age appropriate skills	Healthy eating habits definition	Food group/serving size	Go, slow, whoa chart
Parent book						

	Food substitution	directions	recipe			
Parent book						

	story	plate	symbols	Recipe directions	Shopping list	
Child book						

5. What areas are engaging?

	Table of contents	Introduction	Age appropriate skills	Healthy eating habits definition	Food group/serving size	Go, slow, whoa chart
Parent book						

	Food substitution	directions	recipe			
Parent book						

	story	plate	symbols	Recipe directions	Shopping list	
Child book						

6. What areas are not engaging?

	Table of contents	Introduction	Age appropriate skills	Healthy eating habits definition	Food group/serving size	Go, slow, whoa chart
Parent book						

	Food substitution	directions	recipe			
Parent book						
	story	plate	symbols	Recipe directions	Shopping list	
Child book						

7. Are there any changes or additions you feel are needed?

	Table of contents	Introduction	Age appropriate skills	Healthy eating habits definition	Food group/serving size	Go, slow, whoa chart
Parent book						

	Food substitution	directions	recipe			
Parent book						

	story	plate	symbols	Recipe directions	Shopping list	
Child book						

7. What kinds of healthy recipes do you use to cook for your family? What makes your recipes healthy?

8. How would you benefit from this recipe book?

Table 2 Interview Chart 1

what is the main idea of these books?	what kinds of steps do you take to prepare,cook	Parent book:missing information	Child book:missing information	Parent book:missing directions	Child book:missing directions	Parent book:engaging
give parents ideas	ask child what they want to eat	none	none	none	none	no specification
more recipes, how to eat healthy, ideas	make a list, pick recipe, go to store, bring ingredients to mom while cooking	clarifying different health messages	none	none	none	food group/serving size (pictures), recipe (simple and quick)
involvement of kids, help parents make more choices	ask them what they want, help them walk through the steps, on weekends kids get to help make their favorite dishes	how many calories in certain foods, nutrition value in vegetables and fruits	none	none	none	age appropriate skills, food group/serving size, recipe
kids understanding the process of making a meal	ask child what they want to eat, have child help by tasting	none	how does the body work	none	recipe directions: order of ingredients	no specification
incorporate nutritious meals with children	create menu, grocery, ask them to help mix or set table	none	none	none	none	recipe (step by step activities)
parents and children making good choices and doing it together	get basic ingredients at grocery store, decide what to cook based on what was bought, ask child to wash something or set the table	none	none	none	none	age appropriate skills, food group/serving size, recipe (fun facts), healthy eating habits definition

Table 3 Interview Chart 2

Child book:engaging	Parent book: not engaging	Child book:not engaging	Parent book: changes or additions	Child book:changes or additions	what healthy recipes do you use? What makes it healthy?	how would you benefit from these books?
recipe directions (#s)	lack of images, too much writing, charts	none	1)introduction:add pictures, pop out messages 2)charts:add interesting facts	none	add vegetables	child gets bored easily so this book will get him more involved, spend more time with child, may encourage him knowing he made it himself
story, plate, recipe directions	introduction, charts	none	1)more images 2)charts need to be read easily and quickly 3)recipes need to use simple ingredients	more pictures and activities like coloring, placement of ingredients	simple dishes that include meat, rice, and vegetables, or include a salad if not vegetables in dish	activities
story, recipe (pictures in general)	introduction, charts	none	1)introduction: bullets or highlight info	none	bake instead of fried chicken	getting daughter involved because she loves it, also will be able to keep an eye on younger siblings better if child is at work.
simple images	none	none	none	put measurement ex:cup, tsp	n/a	n/a
story in the beginning	none	none	none	coloring	dish including lean meat, fruit, vegetables	daughter could feel she has her own cookbook just like mom
pictures, diff. children and parents for each recipe, recipe directions, age appropriate level	none	none	none	none	add vegetables	once in a while allow kids to get involved because they enjoy being involved and they enjoy activities

REFERENCES

- Anderson, P.M., & Butcher, K.F. (2006). Childhood Obesity: Trends and Potential Causes [Electronic version]. *Future of Children*, 16(1), 19-45.
- Bouck, M.S., Irwin, J.D., Pollett, G., & Tucker, P. (2006). Preschoolers' Dietary Behaviours: Parents' Perspectives [Electronic version]. *Canadian Journal of Dietetic Practice and Research*, 67, 67-71
- Campbell, K.J., & Hesketh, K.D. (2007). Strategies which aim to positively impact on weight physical activity, diet and sedentary behaviours in children from zero to five years. A systematic review of the literature. *Obesity Reviews*, 8, 327-338. Retrieved September 8, 2007, from <http://www.blackwellsynergy.com/doi/full/10.1111/j.1467-789X.2006.00305.x?cookieSet=1>
- Chickin Feed* (2007). Retrieved November 9, 2007, from *Chickin Feed*, Web site, <http://chickinfeed.com>
- Childhood Obesity*. (n.d.). Retrieved November 9, 2007, from *Department of Health and Human Services*, Web site, http://aspe.hhs.gov/health/reports/child_obesity/
- Complete Cook 'n Learn Interactive Kitchen Set*. (n.d.). Retrieved January 4, 2008, from *Little Tikes*, Web site, <http://www.littletikes.com/toys/complete-cook-learn-interactive-kitchen-set.aspx>
- Crane, E. (2003). The Incredible Edible Schoolyard [Electronic version]. *District Administration*, 28-31.
- Critser, Greg. (2003). *Fat Land: How Americans Became the Fattest People in the World*. New York: Houghton Mifflin Company..
- Crosson, F.J., Kessler, D.A., & Rosenstock, L. (2006). Childhood Obesity [Electronic version]. *Kaiser Permanente, UCLA, UCSF*, 1-23.
- Daniels, S.R. (2006). The Consequences of Childhood Overweight and Obesity [Electronic version]. *Future of Children*, 16(1), 47-67.

David, J. & Galinsky, E. (1988). *The Preschool Years: Family Strategies That Work from Experience*. New York: The Random House Publishing Book.

Dietary Guidelines For Americans. (2005). Retrieved December 7, 2007, from U.S. Department of Health and Human Services Web site, <http://.health.gov/dietaryguidelines/dga2005/document/default.htm>

Donahue, E., Grisso, J., Orleans, T., & Paxson, C. (2006). Introducing the Issue [Electronic version]. *Future of Children*, 16(1), 3-17.

Eatwell Plate. (n.d.). Retrieved September 10, 2007, from Food Standard Agency Web site, <http://www.eatwell.gov.uk/healthydiet/eatwellplate/>

Elkind, David. (2007). *The Power of Play*. United States: Da Capo Press.

Evers, C.L. (2006). *How to Teach Nutrition to Kids*. Oregon: 24 Carrot Press.

Feeding Your Child. (2007). Retrieved November 9, 2007, from Department of Health and Family Services, Wisconsin WIC Program Web site, <http://dhfs.wisconsin.gov/WIC/cards/chld/index.htm>

Food Groups to Encourage. (2005). Retrieved December 7, 2007, from U.S. Department of Health and Human Services Web site, <http://www.health.gov/dietaryguidelines/dga2005/document/html/chapter5.htm>

Food Guide Pyramid for Young Children. (n.d.). Retrieved March 10, 2008, from Department of Health and Family Services, Massachusetts WIC Program Web site, <http://www.mass.gov/Eeohhs2/docs/dph/wic/pyramid.pdf>

French, S., Kaphingst, K.M., & Story, M. (2006). The Role of Child Care Settings in Obesity Prevention [Electronic version]. *Future of Children*, 16(1), 143-167.

Geiger, F.F. (1999). A Nutrition Relay Race for Preschool Health Education [Electronic version]. *Journal of School Health*, 69, 125.

Gortmaker, S., Kim, J., Lindsay, A.C., & Sussner, K.M. (2006). The Role of Parents in Preventing Childhood Obesity. [Electronic version]. *Future of Children*, 16(1), 169-186.

Grier, S. & Kumanyika, S. (2006). Targeting Interventions for Ethnic Minority and Low-Income Populations [Electronic version]. *Future of Children*, 16(1), 187-207.

Healthy Eating. (n.d.). Retrieved February 18, 2008, from *Food Network* Web site, http://www.foodnetwork.com/food/If_health/

Matheson., Spranger, K., Saxe, A. (2006). Preschool Children's Perceptions of Food and Their Food Experiences. *Journal of Nutrition Education and Behavior*, 34, 85-92. Retrieved December 27, 2007, from *ScienceDirect* database.

North, J., Painter, J.E., Wansink, B. (2005). Bottomless Bowls: Why Visual Cues of Portion Size May Influence Intake. *Obesity Research*, 13, 93-100. Retrieved March 24, 2008, from *Obesity Research*, 13, 93-100. Retrieved March 24, 2008, from *Obesity* database.

Oesterreich, L. (1995). Ages and Stages. Retrieved September 8, 2007, from *Iowa State University, National Network for Child Care* Web site, <http://www.nncc.org/Child.Dev/ages.stages.3y.html>

Okely, A.D. (2007). Evidence-guided approaches to addressing child obesity: What approaches can dietitians use in their everyday practice. *Nutrition & Dietetics*, 64, 140-141. Retrieved September 8, 2007, from <http://www.highbeam.com/Nutrition+%7eA%7eDietetics%7eC%7eThe+Journal+of+the+Dieticians+Association+of+Australia/publications.aspx?date=200709>

The ABC's of Growing Healthy Kids. (2006). Retrieved March 8, 2008, from *Penn State, College of Agricultural Sciences* Web site, <http://pubs.cas.psu.edu/freepubs/pdfs/uk077.pdf>

We Can. (n.d.). Retrieved November 30, 2007, from *National Heart Lung and Blood Institute* Web site, <http://www.nhlbi.nih.gov/health/public/heart/obesity/wecan/>

WIC Cooking with Children. (2007). Retrieved February 10, 2008, from *California Department of Public Health* Web site, <http://cdph.ca.gov/programs/wicworks/Pages/WICNECookingwithChildren.aspx>

