FOOD VOYAGE: NUTRITION EDUCATION FOR INTERNATIONAL STUDENTS AND THEIR SPOUSES

by

COURTNEY MERCER STILL

(Under the Direction of Rebecca M. Mullis)

ABSTRACT

International students face unique nutrition issues and may be unfamiliar with American dietary practices. International students often make dietary changes after coming to the United States because their traditional foods are unavailable or difficult to find. These dietary changes could result in increased risk for chronic disease if students choose to adopt common western dietary patterns, which are often high in fat and low in fruits and vegetables. Few nutrition education programs have been developed for international students. For this study, a nutrition education program for international students was developed based on Social Cognitive Theory. The program consisted of four cooking classes designed to increase participants' self-efficacy for purchasing and preparing healthier versions of American foods. Results showed that self-efficacy was significantly improved from the pre-class to post-class for three of four classes, and self-efficacy was significantly improved from the pre-class to the six-month follow-up for all four classes.

INDEX WORDS: nutrition education, international students, social cognitive theory, cooking class

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DEDICATION

This thesis is dedicated to my Grandmother, Barbara Ruth Mercer Beall, who believed I would write it before I did.

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CHAPTER 1

INTRODUCTION

Purpose

Food Voyage was a nutrition education program that used a cooking class format to teach international students how to prepare healthier versions of American foods at home. The Food Voyage program was designed to increase international students' self-efficacy for purchasing and preparing healthier versions of American foods. Food Voyage cooking classes were designed to be highly interactive and provide students with a hands-on, enjoyable learning experience. An overall purpose of the program was to combat the possible negative effects of adopting a more Westernized diet by increasing international student's self-efficacy for purchasing and preparing healthier versions of American foods. The development and implementation of this program has relied on the expertise of members of the University of Georgia Department of Foods and Nutrition as well as the University of Georgia Health Center Health Promotion Department.

Hypothesis

The research question was "Will a nutrition-oriented cooking class series be effective in helping international students develop self-efficacy for purchasing and preparing healthier versions of American foods?" It was hypothesized that a nutrition-oriented cooking class series was effective in helping international students develop self-efficacy for purchasing and preparing healthier versions of American foods. The overall hypothesis was tested with international

students and their spouses at the University of Georgia who volunteered to participate in the cooking classes. The specific aims were:

Specific Aim 1: Develop a nutrition education program for international students using a cooking class format in order to teach the students how to purchase and prepare healthier versions of American foods.

Specific Aim 2: Conduct a pilot program in fall 2010 and spring 2011, using the data and feedback collected from each implementation to make changes to the program. Repeat the program in fall 2011.

CHAPTER 2

LITERATURE REVIEW

International students are a growing population in American colleges and universities, but few nutrition education programs have targeted this diverse group. The Food Voyage Program begins to fill this gap by developing, implementing, and evaluating a social cognitive theory-based nutrition education program for international students. The next sections will review international student enrollment in the United States, situational factors of international students, new food environments, acculturation, and dietary change, nutrition and cooking skills and confidence, and why research on this topic is justified.

International enrollment in the United States and at the University of Georgia

According to the Institute of International Education (2011) there were 723,277 international students in the United States for the 2010-2011 school year, or 3.5% of the total United States higher education enrollment. The number of international students in the United States has increased by 32% since the 2000-2001 school year. In the 2010-2011 school year 291,439 were undergraduate students, 296,574 were graduate students, and 59,233 were non-degree students. The most popular fields of study for these students include business and management, engineering, math and computer science, physical and life sciences, and social sciences (Institute of International Education 2011). Females accounted for 45% of international students studying in the United States in the 2010-1011 school year (Institute of International Education 2011). In the United States, the top three countries of origin are China, India, and South Korea, with 21.8%, 14.4%, and 10.1% of international students coming from these

countries, respectively (Institute of International Education 2011). The state of Georgia ranks 12th in the nation with 15,359 international students total. The top three places of origin for the state of Georgia are China, India, and South Korea, with 20.9%, 16.6%, and 14.7% of international students coming from these countries, respectively (Institute of International Education 3 2011). The international student population at the University of Georgia is similar to that of the United States and Georgia, with 22.0%, 11.8%, and 16.9% of international students coming from China, India, and South Korea, respectively. In fall 2010 the total student population at the University of Georgia was 34,816; 2,320, or 6.7% of these students were internationals coming from 121 different countries. 1,012 (43.6%) were undergraduate students and 1,308 (56.4%) were graduate students (UGA Office of Institutional Research 2011).

Situational factors of international students

International students may have difficulty adjusting to living in a new country, which may lead to a magnification of the problems that a domestic student might face (Ramsey et al 2007). International students may have to deal with cultural differences, language barriers, financial pressure, family expectation, academic stress, social adjustment problems, long distance relationships, and even racial and ethnic discrimination (Carr et al 2003). Al-Sharideh and Goe (1998) reported that developing strong relationships with people of the same cultural background may help students adjust. Participation in these "ethnic communities" may enable students to maintain their cultural identities and protect them from problems commonly associated with a lack of assimilation to American culture, such as loneliness, adapting to the local diet, or communication issues (Al-Sharideh and Goe 1998). Other researchers have found that a connection to the social network of the host country may decrease stress and lead to adjustment (Williams and Johnson 2011). Cappellini and Yen (2012) explored the acculturation

process of a group of Chinese students living in the United Kingdom and found that the students' food consumption patterns changed over time in relation to their social ties. Students who had strong ethnic ties consumed Chinese food to maintain their ethnic identity and resist the culture of the host country, while students with weak ethnic ties consumed Chinese food to maintain their cultural identity and global consumer culture food (food not associated with one culture, but globally available and recognized) to resist the host food culture (Cappellini and Yen 2012). Brown et al (2009) reported that food plays social and emotional roles as a well as a physical one for international students and may be considered an important link to their culture of origin. Relocating to the United States may also mark the first time some international students must cook for themselves because they are away from their families (Brown et al 2009). Changes in access to health care, physical activity, and diet can occur with immigration and may affect health (Satia-Abouta et al 2002).

New food environments, acculturation, and dietary change

As temporary immigrants, international students undergo acculturation to varying degrees. Acculturation is the process by with a racial or ethnic group adopts the cultural patterns of the host country (Satia-Abouta et al 2002). International students may begin to adopt the eating patterns and food choices of the host country; this is referred to as dietary acculturation (Satia 2010). Dietary acculturation is not simply linear movement from traditional to acculturated, but is a complex process that may involve using traditional foods in new ways, including host country foods in traditional dishes, excluding other foods, and consuming new foods (Satia-Abouta et al 2002). Dietary acculturation can result in increased risk for chronic disease if students choose to adopt western dietary patterns, which are often high in fat and low in fruits and vegetables (Sukalakamala and Brittin 2006). It is important to note that not all

dietary changes associated with acculturation are negative; for example, although Hispanic immigrants may consume soda instead of more traditional fruit based beverages as they undergo dietary acculturation they may also consume fewer saturated fats (Satia-Abouta et al 2002). Asian Indians may substitute hydrogenated cooking oils for options with less saturated fat (Archer 2005). Dietary acculturation is affected by many factors, including education, income, length of time in the host country fluency in the host language, exposure to mainstream culture, and the food supply (Satia-Abouta et al 2002).

Assessing dietary acculturation can be difficult, as many of the acculturation scales and indexes have been developed for use in social science and psychological research. There are three major approaches to measuring dietary acculturation: single-item measures of general acculturation, acculturation scales, and food-based assessments. Single item measures include length of residency, language, generation level, friendship preferences, and self- identification, among others. While these measures do provide some general information about acculturation, it is not very specific. Acculturation scales are more complete and provide more specific information, but these scales do not usually include specific measures of dietary acculturation. Food-based measures directly assess the outcome of dietary acculturation, but do not assess psychosocial factors (Satia-About a et al 2002).

In a survey of international students at a university in Belgium, Perez-Cueto et al (2009) found that 85% of participants made dietary changes after moving to a new country to study; it should be noted that female students were 62% less likely to have made dietary changes than males. This suggests that the women in this study may have been able to find ways to maintain their dietary habits while living in a new country. Lack of information, price, peer pressure, lack of will power, and unavailability were identified as deterrents to healthy eating (Perez-Cueto

et al 2009). In a survey of Asian college students in the United States, Pan et al (1999) found that 59% of participants thought they had made dietary changes since arriving in the United States; a lack of time to prepare traditional foods, unavailability of ethnic foods, poor quality of ethnic foods, not knowing how to cook, and ethnic foods being more expensive were cited as reasons for dietary changes. It was also reported that these students were skipping breakfast more often, consuming more sweet and salty foods, and eating fewer vegetables since coming to the United States. The students also reported a gain of about five pound since coming to the United States. Although students reported dining out less since coming to the United States, the foods they were eating when dining out were usually American-style fast foods such as hamburgers, pizza, sandwiches, French fries, and soft drinks. The reasons commonly given for these choices were convenience and availability (Pan et al 1999). The unavailability of traditional foods and ingredients is likely to necessitate increased consumption of host country foods (Satia-Abouta et al, 2002). Acculturation may also be linked to dining out. Bojanic and Xu (2006) conducted a survey of the Chinese community in a university town in Massachusetts in which over half of the sample consisted of international students. The length of stay in the United States was significantly longer for the most highly assimilated group, and those in the highly assimilated group dined out more for lunch and dinner than the low assimilation group or ethnic affirmation group (Bojanic and Yu 2006).

Through semi-structured interviews, Brown et al (2009) found that international postgraduate students at a university in England showed an openness to the foods of the host county although they were described by some as bland and unhealthy. Food from the student's country of origin was preferred, and provided emotional benefits as well as physical ones (Brown et al 2009). The rejection of foods that are novel or unknown is known as food

neophobia and may affect the food choices of international students (Edwards et al 2010). Edwards et al (2010) measured food neophobia in international students attending a Masters course and found that food neophobia scores rose significantly after international students had been in the host country for three months, and though these differences decreased after 12 months they did not return to initial values. This may indicate that students arrive with an open attitude but become less open after experience with the available food and the additional stressors of their new environment. This study also showed that Asian students were significantly more food neophobic than European students (Edwards et al 2010). It has been suggested that recent immigrants should be encouraged to retain their traditional healthful eating patterns while adopting the healthful aspects of the eating patterns of the host country in order to prevent the adoption of a diet low in fruits and vegetables and high in fat (Archer 2005, Satia-Abouta et al 2002).

Social Cognitive Theory: Nutrition and cooking skills and confidence

Social Cognitive Theory provides a framework for understanding how the interaction of behavioral factors, cognitive and other personal factors, and environmental factors influence behavior change. This interaction is referred to as reciprocal determinism. A key construct of this theory is observational learning. Most human behaviors are learned from observing others who are modeling those behaviors. Self-efficacy, or people's confidence in their abilities to engage in certain behaviors, is another important construct of Social Cognitive Theory. Social Cognitive Theory recognizes the impact of behavioral, personal, and environmental factors on each other and on self-efficacy beliefs (Bandura 1986). Many behavioral and personal factors are present for international students. Social Cognitive Theory is especially suited to the sample population for this study because international students are in a

new environment, which can dramatically affect their self-efficacy related to purchasing and preparing food. Further, the interactive cooking class experiences used in this study provide participants with the opportunity to engage in observational learning, as they can observe the instructor and their peers cooking and then model these behaviors.

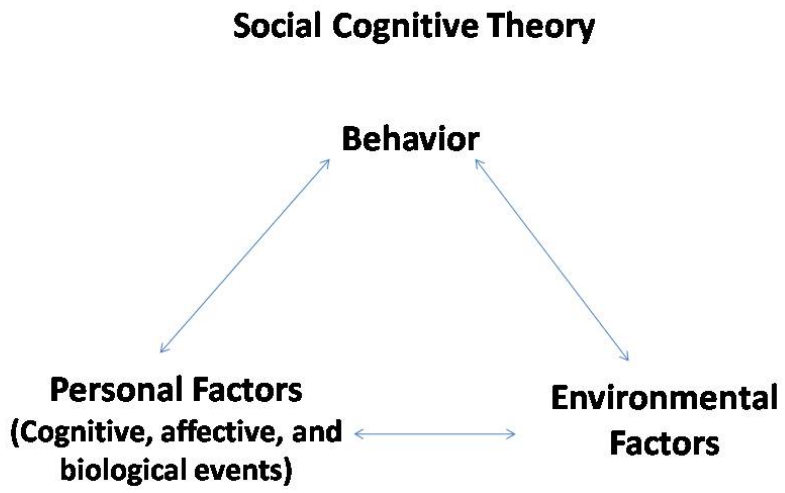

Figure 2.1 Social Cognitive Theory Model (Pajares 2002)

Levy et al (2004) reported a positive shift in self-efficacy for cooking skills in college students participating in a cooking class intervention based on social cognitive theory. By employing qualitative research methods, Brown et al (2010) found that international students' desire for home country food and interest in new foods required them to learn to cook for the first time. Post-tests from programs teaching cooking skills have been shown to promote positive dietary changes and to increase confidence in participants' ability to cook (Engler-Stringer 2010). TV cooking show series for college students based on Social Cognitive Theory resulted in a significant increase in knowledge of fruit and vegetable recommendations post-

intervention and at 4-month follow up, but there were no significant changes in self-efficacy (Clifford et al 2009).

Cooking classes may be an effective way to begin improving or maintaining diet quality of international students during their time in the United States. Young adults in the United States who report more frequent food preparation have also reported less frequent fast-food consumption and are more likely to meet the dietary recommendations for fruit, vegetable, and whole grain intake (Larson et al 2001).

Gaps in the Literature

Although there is a growing body of literature about acculturation and dietary changes in immigrant populations, less is known about how acculturation may affect international students. In a study investigating dietary changes of international students in Belgium, Perez-Cueto et al (2009) reported that 65% of respondents perceived having received no information about how to eat healthy in their new food environment. Garden-Robinson et al (2010) reported that international students were interested in learning how to safely handle and prepare unfamiliar foods while living in the United States. Although these studies indicate that there is need for and interest in nutrition and cooking education in this population, few programs have been developed. This study helps fill the current gap in the literature regarding cooking class based nutrition education programs for international students.

CHAPTER 3

METHODS

Study Design

The study design of this project has two phases. Pilot I, conducted in Fall 2010, was primarily a tool for formative evaluation. The curriculum, program structure, and instruments were tested with the target audience and the resulting information was used to improve the program. The revised curriculum and instruments were used in both the Spring 2011 and Fall 2011 Pilot II implementations of the program. All methods and procedures were approved by the University of Georgia Institutional Review Board.

Curriculum Development (Pilot I)

Materials for the Fall 2010 pilot of the Food Voyage program were created in Fall 2009 and Summer 2010 by Ms.Courtney Still and Dr. Rebecca Mullis. Interviews with international students were used to guide the curriculum development process. A common theme that emerged from the interviews was the belief that the students had a more healthy diet before coming to the United States. The students who were interviewed also tended to consider their current diet not as healthy as it could be; fruits and vegetables were considered healthy and students thought they should eat more of them. A preference for foods from their home countries was expressed, and most students indicated that the foods they cooked at home were usually foods common in their home countries. Students expressed difficulty finding foods they were accustomed to in American grocery stores. Some students felt their diets had not changed much since coming to the United States, while others indicated that their diet had changed

greatly. The most common change identified by the students was that they were now the one responsible for preparing meals. All students interviewed expressed interest in learning more about American foods, healthy foods, and how to prepare foods.

Using the information from the interviews and available literature, a social cognitive theory based curriculum was developed. The curriculum was designed to improve international students' knowledge, self-efficacy, behaviors, and skills related to nutrition through a nutrition class, a grocery store visit, and cooking classes. Five classes were offered, and participants were expected to attend all five classes. The first class provided an overview of MyPyramid with an emphasis on foods from students' home countries and the opportunity to sample common American foods in each food group. The second class was a grocery store scavenger hunt. The final three classes were cooking classes. Each cooking class highlighted a different meal of the day. Recipes included fruit and yogurt parfaits, veggie wraps, and baked chicken nuggets with green beans and mashed potatoes. All classes were taught by Ms. Courtney Still and supervised by Ms. Angela Ruhlen, MFCS, RD, LD.

Food frequency questionnaires were intended to be used but were not able to be completed due to time constraints. Participant information forms were completed and provided data on students' country of origin and home cooking environments. This information was collected because the living situations of international students and their families vary. Pre-and post-intervention questionnaires were intended to be completed before and after the five class program; however, some students missed the first class and therefore students completed these forms upon their arrival to the first class they attended. Participants had the opportunity to complete feedback forms and participate in post-program interviews to describe what they liked about the program, what they did not like, and how the program could be improved.

Recruitment was identified as a problem early in the implementation process. The inclusion criteria specified that only international students who had been in the United States for a year or less and their spouses were eligible to attend. The teaching kitchen at the University Health Center had enough space for 12 participants, and 12 students initially signed up to attend all five classes. Actual attendance was low, but increased through the course of the 5-week program. A total of eight students participated. Students cited issues such as class schedules, exams, school work, and extracurricular activities as reasons for not being able to attend all sessions. The inclusion criteria were changed for Pilot II to include all international students or spouses of international students at the University of Georgia. Participants found it difficult to attend all five sessions due to busy schedules. For this reason, for Pilot II participants signed up for individual classes rather than the whole series, if they preferred. Recruitment for Pilot II was done via email through the University of Georgia International Student Life Listserv.

Pilot I provided valuable information as to how the curriculum and instruments should be changed to best serve the target audience. Participants indicated that they preferred and would like more cooking class type sessions. Class topics were chosen based on interviews with international students and feedback from participants. The five-course series was changed to four classes, all of which were cooking classes. It was decided that outcome measures should focus solely on self-efficacy for purchasing and preparing healthier version of American foods rather than knowledge, attitudes, skills, and behaviors, as the original instruments were long and time-consuming. The main goal of the program remained the same, but the objectives were refined. Instruments were changed to pre-intervention questionnaires and post-intervention questionnaires given before and after each class rather than before and after the entire program.

Implementation Phase (Pilot II)

The revised program, Pilot II, was implemented in spring 2011 and repeated in fall 2011. The University of Georgia University Health Center Health Promotion Department provided the teaching kitchen, equipment, and support from a University Health Center Registered Dietitian. In spring 2011, the program was conducted by Courtney Still with supervision and assistance from Ms. Angela Ruhlen, MFCS, RD, LD. In fall 2011, the program was conducted by Courtney Still with supervision and assistance from Mr. Benjamin Gray, MS, RD, LD.

Pilot II was also based on Social Cognitive Theory. Figure 3.1 displays the theoretical model for the program.

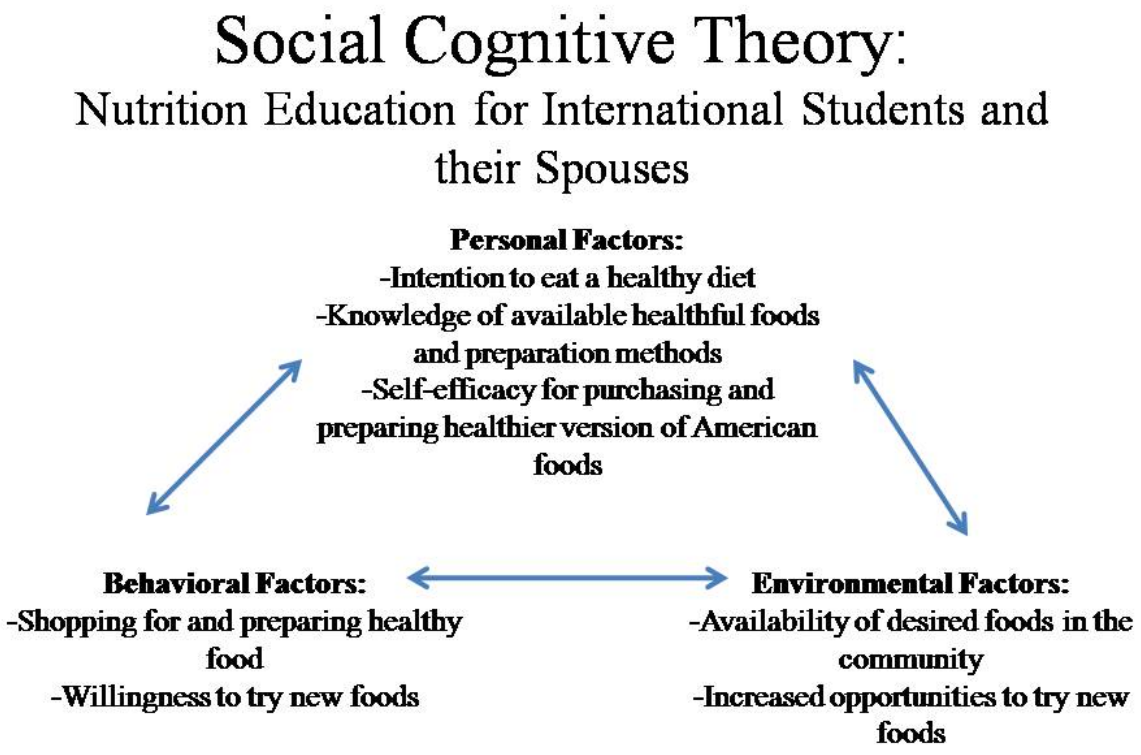

Figure 3.1 Theoretical Model for the Food Voyage Program

The sample of international students and spouses of international students was drawn from the international student population at the University of Georgia. Potential participants were contacted through the International Student Life Department e-mail listserv and were provided with informational handouts and flyers in digital form. Paper flyers were also distributed at international student events.

Students who signed up to participate in the classes were sent reminder emails two to three days prior to the day of the scheduled class. Classes were held on Mondays each week for four weeks. In spring 2011 the classes were held over a five week period, as a university holiday made it necessary to miss one Monday class. Table 3.1 displays class topics. In addition to the selected skills focused on in each class, all sessions emphasized learning to prepare nutritious meals for participants and their families. The teaching manual can be found in Appendix A.

Table 3.1 Cooking Class Topics*

Class	Recipe	Skills Focus	Nutrition Focus
1	Veggie Wraps	Knife skills Sautéing	Fruit Vegetables Grains
2	Baked Chicken Nuggets Green Beans Mashed Potatoes	Measuring skills Safe handling of raw meat Boiling	Meat and beans Vegetables
3	Fruit and Yogurt Parfaits Fruit Salad	Knife Skills Finding produce in the grocery store	Milk Grains Fruit
4	Whole Wheat Chocolate Chip Cookies	Baking Finding reliable nutrition information Making substitutions in dessert recipes	Grains Oils Recipe substitutions

*All sessions emphasized learning to prepare nutritious meals for participants and their families.

Goals and objectives were created based on Fink's Taxonomy of Learning. Fink outlines six different kinds of significant learning, and the objectives for the Food Voyage Program are divided into these major categories: Foundational knowledge, application, integration, human dimension, caring, and learning how to learn (Fink 2003). Goals and objectives are listed below.

Goal: To equip international students with the skills and confidence necessary to begin and maintain a healthy diet.

Objectives:

Students will:

Foundational Knowledge:

1. Learn how to prepare basic recipes.

2. Understand how preparation methods and ingredient choices can make foods more or less healthy.

3. Understand similarities and differences between their traditional diet and a more Western diet.

4. Learn places where they can grocery shop locally.

5. Learn strategies for grocery shopping.

Application:

6. Be able to apply the cooking and nutrition skills learned to other recipes.

Integration:

7. Understand how shopping and food preparation impacts healthy eating behaviors.

Human Dimension:

8. Be able to assess their own eating habits and feel confident about making changes, if necessary.

9. Develop relationships with other students who may have more experience and will feel comfortable asking and giving help.

Caring:

10. Feel confident in their ability to prepare nutritious food for themselves and others.

11. Feel confident that they can make healthy food choices in any environment.

12. Be excited about trying new foods.

13. Not be intimidated by shopping and meal preparation.

Learning How to Learn:

14. Be able to locate resources for further instruction. (Recipes, internet demonstrations, etc)

Prior to participating in any class each participant signed consent forms and completed the participant information forms. These forms only had to be completed once, so if students attended multiple classes they did not have to fill these forms out again. At the beginning of each one-hour class, prior to any cooking instruction, each participant completed the pre-class questionnaire. At the conclusion of the class, after tasting and discussion, participants completed the post-class questionnaire. These questionnaires were very brief and assessed self-efficacy for purchasing and preparing healthier versions of American foods. The questionnaires ranged from three to five multiple choice Likert scale type questions. Six months after the conclusion of the program, all participants were emailed a link to an online follow-up questionnaire which consisted of repeated self-efficacy questions and a question asking if the participants had used any of the Food Voyage recipes at home. Participants were asked to respond within a two week period. The curriculum and instruments were evaluated for construct validity; the construct validity chart can be found in Appendix F. The curriculum and instruments were reviewed by Drs. Rebecca Mullis, Gail Hanula, and Ruthann Swanson to establish content validity.

CHAPTER 4

STUDY SAMPLE AND MEASURES

Description of Study Sample

The study sample consisted of 30 participants total; 14 from spring 2011 and 16 from fall 2012. All participants completed the participant information form. Pre- and post-class questionnaires were collected from all the participants present at each session. Six-month follow-up questionnaires were sent via email to all participants; not all participants completed the follow-up. All participants were international students or spouses of international students at the University of Georgia. All participants were between 19 and 36 years of age with the mean age being 26.13 years old. Selected characteristics of the study sample are shown in Table 4.1. Twenty percent of the participants were male and 80% were female. Country of origin varied; 50% of the participants were from China, 13.3% from Turkey, 10% from India, 6.7% each from Taiwan and Germany, and 3.3% each from South Korea, Iran, Ecuador, and Lithuania. Only 1 participant (3.3%) was an undergraduate student, while 76.7% of participants were graduate students and 20% were spouses of international students.

The length of time the participants had been in the United States also varied. Thirty percent of the participants had been in the United States for less than three months. Thirteen precent had been in the United States for three to six months; 16.7% had been in the United States for six months to one year; 20% had been in the United States for one to two years, and 20% had been in the United States for longer than 2 years. The participants also had varied levels of comfort with speaking and reading English. Fifty-seven percent of participants chose

"strongly agree" when asked how much they agreed with the following statement "I am comfortable speaking and reading English"; 27% of participants agreed; 7% were undecided, and 10% disagreed. When asked what languages were used in the movies, T.V., and radio programs that participants most often watched and listened to, 47% responded "all in English" or "Mostly in English", 43% responded "about half in English, half in other languages", and 10% responded "mostly in languages other than English".

Table 4.1 Description of Study Sample (n=30)

Characteristic	Total	Percentage (%)
Gender		
Male	6	20.0
Female	24	80.0
Student Status		
Undergraduate Student	1	3.3
Graduate Student	23	76.7
Spouse of Student	6	20.0
Country of Origin		
China	15	50.0
Turkey	4	13.3
India	3	10.0
Taiwan	2	6.7
Germany	2	6.7
South Korea	1	3.3
Iran	1	3.3
Ecuador	1	3.3
Lithuania	1	3.3
Length of Time in U.S.		
Less than 3 months	9	30.0
3 to 6 months	4	13.3
6 months to 1 year	5	16.7
1 to 2 years	6	20.0
Longer than 2 years	6	20.0

All participants indicated that they had a place to prepare food in their house or apartment. All participants also indicated that they had a stove, oven, sink, and refrigerator in their house or apartment. Selected food consumption and preparation habits can be found in Table 4.2. All participants except for one had a microwave in their house or apartment.

Participants were asked how often they prepared their own meals before they came to the United States. Thirty-seven percent responded “frequently”, 30% responded “occasionally”, 23% responded “rarely”, and 10% responded “never”. However, when asked how often they prepared their own meals now (after coming to the United States), 77% of participants responded “frequently”, 13% responded “occasionally”, and 10% responded “rarely”.

Fifty-seven percent of participants indicated that they occasionally ate at restaurants that served food other than the food of their home country; 30% indicated that they rarely did so. Sixty-three percent of participants stated that they occasionally ate foods that they would consider American foods; 30% said that they rarely ate foods they would consider American foods; and 6.7% said that they frequently ate what they would consider American foods. When asked about the kind of food they prepared at home 53% of participants stated that they prepared food commonly eaten in their country, while 47% of participants stated they prepared some food commonly eaten in their country, and some food commonly eaten in the United States.

Table 4.2 Food Consumption and Preparation Habits (n=30)		
Question	**Total**	**Percentage (%)**
Before you came to the U.S., how often did you prepare your own meals?		
Frequently	11	36.7
Occasionally	9	30.0
Rarely	7	23.3
Never	3	10.0
How often do you prepare your own meals now?		
Frequently	23	76.7
Occasionally	4	13.3
Rarely	3	10.0
Never	0	0
How often do you eat at restaurants that serve food other than the food of your home country?		
Frequently	1	3.3
Occasionally	17	56.7
Rarely	11	36.7
Never	1	3.3
How often do you eat what you would consider American foods?		
Frequently	2	6.7
Occasionally	19	63.3
Rarely	9	30.0
Never	0	0
If you prepare food at home, what kind of food do you prepare?		
Food commonly eaten in my home country	16	53.3
Some food commonly eaten in my home country, and some food commonly eaten in the U.S.	14	46.7
Food commonly eaten in the U.S.	0	0
I do not prepare food at home.	0	0

All 30 participants were contacted via email to complete the follow-up survey online. Twenty-two participants completed the follow up survey. Eight participants (27%) were lost to follow-up. The response rate for the follow-up survey was 73%.

Measures

Instruments were originally developed in summer 2010 and tested in fall 2010, as discussed previously. Information from the fall 2010 pilot was used to revise the instruments. Due to the lack of information on the topic of international students and nutrition information, no appropriate existing instruments were identified in the literature.

Participant Information Form

The participant information form was a 19 item questionnaire. This form included questions about the age and gender of the participants, how long they had been in the United States, and if they were an undergraduate, graduate student, or spouse of a student. The form also inquired about food allergies. The participant information form also included questions designed to assess the participant's home food preparation environment, how often they prepared their own meals, and what kind of food they prepared. Questions referring to household cooking equipment included pictures for reference. Questions about reading, speaking, and listening to English were also included. The participant information form can be found in Appendix B.

Pre-and Post-Class Questionnaires

Each session had pre-and post-class questionnaires with questions designed to assess students' self-efficacy for various purchasing and preparing healthier versions of American foods. Questions were specific to the topic of each class. Each questionnaire was three to five questions long. The post-class surveys each had one more question than the pre-class questionnaire. This item asked students to indicate how much they agreed with the statement "I feel confident that I could make the recipe(s) we made today on my own at home". The pre-and post-session class can be found in Appendix C.

Feedback Survey

The feedback survey included questions about the helpfulness of the program, the length of the program, importance of topics, how understandable the sessions were, what helped and did not help participants learn, and their suggestions for program improvement. The feedback survey was completed only at the conclusion of the last session. The feedback survey can be found in Appendix D.

Six-Month Follow-up Questionnaire

The six-month follow-up questionnaire included all of the questions asked on the previous pre-and post-class questionnaires, as well as any additional question which asked the participants if they had used the recipes they learned in the sessions at home. Participants were contacted via email and provided a link to an online survey through surveymonkey.com. Participants were asked to complete the survey within two weeks of receiving the email and were sent an email reminder at the beginning of the second week. The six-month follow-up questionnaire can be found in Appendix E.

Statistical Analyses

Data were analyzed using SPSS Statistics Version 18 (IBM Corporation, Armouk, NY). Frequency distributions and descriptive statistics were used to describe the study sample based on the information collected on the participant information form. Frequency distributions were used to describe responses to questions only asked once on the pre-and post-session questionnaires, the feedback form, and the six-month follow-up questionnaire. Questionnaire items that assessed self-efficacy for purchasing and preparing healthier versions of American foods were summed to determine a score for each pre-, post-, and six-month questionnaire. Repeated measures ANOVA with Bonferroni t-tests was performed to determine whether there

were differences between pre-, post-, and 6-month self-efficacy measures. Independent samples t-tests were used to determine significant differences in pre-, post-, and six-month follow-up questionnaire scores. Correlation analyses were used to determine if number of classes attended were associated with retention of self-efficacy for cooking and nutrition related skills as determined by the 6-month follow up. A Pearson product-moment correlation analysis was used, and the alpha level was 0.1. Correlation analyses were also used to determine the relationship between frequency of meal preparation or length of time spent in the United States and self-efficacy scores on the six-month follow-up questionnaire as well as language use and frequency of consumption of American foods. Spearman's rank order correlation analyses were used, and the alpha level was set at 0.1.

CHAPTER 5

RESULTS AND DISCUSSION

Results

The post-class questionnaires each had one more item than the pre-class questionnaires. This item asked students to indicate how much they agreed with the statement "I feel confident that I could make the recipe(s) we made today on my own at home". The percentage of student responses is shown in Table 5.1. The majority of students reported using the recipes at home.

Table 5.1 Self-Efficacy[b] for Using Food Voyage Recipes at Home

	Percentage (%)				
Class[a]	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1 (n=23)	73.9	26.1	0	0	0
2 (n=15)	80.0	20.0	0	0	0
3 (n=19)	84.2	15.8	0	0	0
4 (n=12)	66.7	25.0	8.3	0	0

[a] class 1: veggie wraps; class 2: baked chicken nuggets, green beans, mashed potatoes; class 3: fruit and yogurt parfaits, fruit salad; class 4: whole wheat chocolate chip cookies.
[b] Scores were based on a series of Likert scale type questions; 1= Strongly Agree, 2=Agree, 3= Undecided, 4= Disagree, 5= Strongly Disagree.

Table 5.2 shows the mean pre-class, post-class, and 6-month follow-up self-efficacy scores for purchasing and preparing healthier versions of American foods. Post-class scores were significantly lower than pre-class scores for classes one, two, and four, indicating increased self-efficacy. Follow-up scores were significantly lower than pre-class scores for all four classes. There were no significant differences between post-class scores and 6-month follow-up scores.

Table 5.2 : Mean Pre-, Post-, and Follow-up Self-Efficacy Scores[a]			
	Means±SD		
Class [b]	Pre-Class Score	Post-Class Score	Follow-up Score
1	5.68±1.38	4.16±1.50[*]	4.21±1.72[**]
2	7.08±2.02	5.08±1.31[*]	5.25±1.71[**]
3	4.42±1.31	3.50±0.90	3.75±1.22[**]
4	9.00±2.54	5.30±1.49[*]	6.40±2.55[**]

SD indicates standard deviation.

[a] Scores were based on a series of Likert scale type questions; 1= Strongly Agree, 2=Agree, 3= Undecided, 4= Disagree, 5= Strongly Disagree.

[b] Highest possible score for classes 1 and 3 was 15, for classes 2 and 4 highest possible score was 20.

[*] The change from pre-class to post-class was significant according to repeated measures ANOVA with Bonferroni t-tests, $p<0.05$

[**] The change from pre-class to 6-month follow-up was significant repeated measures ANOVA with Bonferroni t-tests, $p<0.05$

Table 5.3 displays the results of independent T-tests comparing pre-class, post-class, and follow-up scores for trial I and trial II. There were no significant differences in the scores from trial I to trial II except for the post-class scores for class three and the six-month follow-up scores for class four.

Table 5.3 Mean Self-Efficacy Scores[a] for Trial I and Trial II				
		Means±SD		
Class[b]		Trial I Score	Trial II Score	p-value[c]
Class 1	Pre-Class	5.83±1.95	5.91±1.38	0.92
	Post-Class	3.50±0.90	4.64±1.69	0.06
	6-month Follow-up	4.00±1.80	4.40±1.71	0.63
Class 2	Pre-Class	7.44±2.35	8.17±2.56	0.58
	Post-Class	4.89±1.17	6.00±1.79	0.16
	6-month Follow-up	4.71±1.50	6.00±1.87	0.21
Class 3	Pre-Class	4.45±1.37	5.25±1.98	0.31
	Post-Class	3.18±0.40	4.13±1.25	0.03
	6-month Follow-up	3.63±1.41	4.00±0.82	0.64
Class 4	Pre-Class	8.44±2.30	10.67±1.53	0.16
	Post-Class	5.11±1.83	6.67±1.15	0.21
	6-month Follow-up	5.14±1.68	9.33±1.53	0.01

SD indicates standard deviation.
[a] Scores were based on a series of Likert scale type questions; 1= Strongly Agree, 2=Agree, 3= Undecided, 4= Disagree, 5= Strongly Disagree.
[b] Highest possible score for classes 1 and 3 was 15, while for classes 2 and 4 highest possible score was 20. Lower scores indicate higher self-efficacy.
[c] Independent t-tests were used to compare scores from trial I and trial II.

Seventy-three percent of students who completed the 6-month follow-up survey responded “strongly agree” or “agree” to the statement “I have used one or more of the recipes I learned in the Food Voyage Program at home”. Self-efficacy scores on the 6-month follow-up survey were found to be moderately negatively correlated with attendance ($r = -0.45$, $p<0.05$). A lower score indicated increased self-efficacy for purchasing and preparing healthier versions of American foods; as attendance increased self-efficacy increased. Frequency of meal preparation before or after coming to the United States was not found to be significantly correlated with self-efficacy scores on the six-month follow-up questionnaire. Length of time participants had been in the United States was not found to be significantly correlated with self-efficacy scores on the six-month follow-up questionnaire. Level of comfort speaking and reading English was moderately positively correlated with frequency of consumption of what participants considered

American foods ($r = .42$, $p < 0.05$). The more comfortable participants were speaking and reading English, the more often they ate what they would consider American foods. Frequency of eating at restaurants serving food other than the food of participants home country and type of food prepared at home were not found to be associated with level of comfort speaking and reading English or language used in movies, TV, and radio programs watched and listened to by participants.

Thirteen participants completed feedback surveys. All of the students surveyed indicated that the program was "very helpful" on a five-point scale where 1= very helpful and 5= not helpful; 92% felt that the length of the program was acceptable while 8% felt it was too short. All of the students that completed the surveys indicated that they felt the program addressed topics that were important to them. One participant wrote "Yes. I wanted to know how to make American foods. So, I think this program's topics are very good for me". When asked if there were parts of the program that were difficult to understand, most participants responded no. Several students indicated that they were not familiar with some of the ingredients used in the classes. Participants gave a variety of responses to the question "What helped you learn?". Many noted the hands-on cooking opportunities, working together, watching the instructor and others, and learning how to use knives safely. Examples of responses include "Practical learning", and "The classes' demonstration of how to cook is very effective". Most students responded "nothing" to the question "What did not help you learn?" When asked what suggestions they had for the improvement of the program, most indicated they were satisfied with the program. Some participants stated they would like longer classes or more classes.

Discussion

The purpose of the research was to develop, implement, and evaluate a nutrition education program for international students using a cooking class format in order to teach the students how to purchase and prepare healthier versions of American foods. The majority of students indicated that they had used one or more of the recipes taught in class at home. Also, self-efficacy for purchasing and preparing healthier versions of American foods increased from pre-class to post-class for three of four classes and from pre-class to the six-month follow-up for all four classes. This suggests that a cooking class format is an effective vehicle for nutrition education amongst this population. Self-efficacy scores did not change significantly from pre-class to post-class for only class three. The skills focused on in this class were knife skills, and finding fruits and vegetables in American grocery stores. Scores may have been low initially and not changed much because knife skills were also taught in the first class and students may have already had sufficient experience in American grocery stores based on the length of time they had been in the United States. Because post-class questionnaires were completed immediately following the cooking classes, it is unlikely that the results were contaminated by other programs or events. Participants may have felt pressured to respond favorably to post-class questionnaires based upon social desirability. The retention of elevated self efficacy from post-class to the six-month follow-up could be attributed to the Food Voyage program; however, external factors could have also been an influence.

Two trials of the program were combined for this analysis. Independent t-tests showed that the scores for both trials were largely the same with two notable exceptions; the post-class scores for class three and the six-month follow-up scores for class four. Class three focused on knife skills and finding produce in the grocery store; class four focused on baking, substitutions

in dessert recipes, and finding reliable nutrition information. These differences could have been due to unintentional differences in the delivery of the curriculum from trial I to trial II, differences in the sample population, or other factors.

Responses from the feedback surveys showed that most participants found the program helpful, easy to understand, and applicable. Students particularly enjoyed the opportunity to learn through hands-on experience.

Limitations

This pilot study had a very small sample size, which may have prevented the observation of significant effects. The sample was a convenience sample; only students who expressed interest in the program signed up and attended. As such, the sample may not accurately reflect the international student population at the University of Georgia. Also, information collected on acculturation was very limited. Programs tailored to the level of acculturation or country of origin may be more effective. Attendance at certain classes may have been decreased due to unfortunate scheduling issues. For example, the last class of trial 2 was very poorly attended; it is hypothesized that this was due to midterm week. Another limitation of this study is the lack of a control group. A control group of international students who do not receive attend the classes but complete the pre, post, and follow-up questionnaires could be added and would strengthen the study design. Only self-efficacy for purchasing and preparing healthier versions of American foods was measured, so the effect of this program on knowledge, attitudes, and behaviors is unknown. The intervention consisted of four one hour classes, and not all students attended all classes because the structure of the program allowed students to select which classes to attend. The instruments were evaluated for content and construct validity only. Phrasing may have been a problem with the surveys, as several questions may have been unclear. For example, one

question on the follow up survey asked how long student had been in the United States. Answer choices included “less than 3 months” ,“3-6 months”, “6 months to 1 year”, “1 to 2 years”, and “longer than 2 years”. These answer choices were poorly worded, because several of these time periods overlap. Feedback surveys were only administered in person and only at the last class, so any students who did not attend the last class did not have the opportunity to complete feedback surveys. This may have biased the results of the feedback surveys. Although the response rate for the follow-up questionnaire was considered good at 73%, the inclusion of follow-up data for all participants would have strengthened the results. Another limitation may have been slight changes in the delivery from trial I to trial II. Although the instructor was the same, there may have been unintentional changes in delivery; also, the dietitian supervising and assisting the instructor was different. As with many educational interventions, it is difficult to know if changes in self-efficacy for the selected cooking and nutrition related skills over six months are the result of the intervention or other factors. However, this pilot work shows the feasibility of this approach and provides valuable data for other researchers to use in similar studies.

CHAPTER 6

CONCLUSIONS AND FUTURE RESEARCH

International students are a vital part of the community of most large universities, and the international student population in the United States continues to grow. These students find themselves in a new and often completely different food environment. However, few programs have been created to address their nutrition education needs. Further research should focus on exploring the nutrition and cooking interests, situational factors, and perceived need of instruction of this group, as well as developing larger scale nutrition education programs.

As discussed previously, the effect of acculturation on food intake and health outcomes on immigrants has been studied. However, the extent of acculturation undergone during a shorter term residence in another country has not been well studied. Future research on the extent of acculturation in international students, the acculturation process, and how this affects their food habits is warranted.

The Food Voyage program was moderately successful, but was short and limited in scope. Larger studies will need to be conducted before the effectiveness of such programs can truly be concluded. The inclusion of a control group would strengthen future studies. This study only included four brief cooking classes, and while many students attended more than one class not all did. Several students attended only one class. Increasing the duration of the program by offering more than four courses may be helpful in improving self-efficacy for the selected skills. This study only collected information on self-efficacy for purchasing and preparing healthier versions of American foods. Further studies should investigate the effects of cooking class type

nutrition education programs on knowledge, attitudes, and behaviors as well. This study was conducted with a small sample of students at the University of Georgia; replicating this program at other universities in other parts of the country would help determine if the results are generalizable to a larger population.

Interest in American foods as well as a desire to share the foods of students' home countries commonly came up as a topic of conversation during the classes. Another direction that research in the area of nutrition education for international students could take would be the inclusion of American students and development a cultural food exchange program, in which American students help international students learn how to cook American foods and international students share foods from their countries with American students.

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APPENDIX A

TEACHING MANUAL

Class 1: Veggie Wraps

Overview:

- This class should take about one hour
- Nutrition Focus: Fruit, Grains, and Vegetables: The Fruit and Vegetable groups will be highlighted in this lesson. Issues to be addressed/discussed will include:
    - How much is needed?
    - What belongs in each group?
    - What foods do I eat now in these groups?
    - What foods could I add?

- Learning Activity: Food Demonstration: Veggie Wraps

To prepare for this lesson:

- Review the nutrition focus sheet. Plan when you will mention this information.
- Check ingredient and equipment lists to make sure you have everything. Don't forget sampling utensils and plates, if needed
- Make sure that you have all the handouts that you need.
- Pre-chop some of the veggies before class, but leave a bit to be done in front of the students so they can see proper knife skills.
- Set out a pitcher of water with cups.

Introduction:

Thanks for coming to our cooking class today. I hope you will all enjoy it! First, we need to take care of a little paperwork. The first piece is a consent form which is necessary because this series of cooking classes is part of a research project about nutrition education for international students. Hopefully, research like this will help us make this program long-lasting for future international students at UGA and other schools. Next is the participant information form, which is just a short questionnaire about your food habits, cooking skills, and background. You don't need to put your name on it, and if you come again next week you will not have to fill it out again. Before we start, we have a very short set of questions we would like you to answer before we get started about our particular program today. (Allow participants time to complete paperwork. This may take up to 20-25 minutes, so the recipe for this session is fairly short)

Today we're going to make a quick, easy recipe that is great for lunch or dinner. How many of you have had a wrap before at a dining hall or restaurant? Has anyone made one at home? Wraps are simple to make and are similar to sandwiches, but we use a tortilla, or wrap, instead of

two slices of bread. This wrap will be packed with lots of delisicious vegetables. Let's all wash our hands before we get started. Preparing food without washing your hands is an easy way to spread disease. Does anyone know how long we should wash out hands? Yes, about 20 seconds, using warm, soapy water.

This demonstration will focus on basic measuring skills, how to prepare a quick, nutritious lunch, and where to find these foods for sale. (The recipe does not have to be followed exactly- students can use whatever vegetables that they like!)

(Show the students the vegetables that will be used as you are talking. Use the information on the nutrition focus sheet to guide your discussion of vegetables and whole grains. Tell the students where you bought the vegetables and other ingredients and in what part of the grocery store they can find them as you use them. Remind them to wash their vegetables before using them.)

1 medium zucchini, sliced
1 green pepper, sliced
1 red pepper, sliced
1 small onion, sliced
1 Tbsp olive oil
1 clove garlic, chopped
3 cups spinach
1 container (7-8oz) hummus, any flavor
1 cup low fat mozzarella cheese, shredded
6 tortillas

Equipment:
Knife
Cutting board
Frying Pan
Spatula
Tongs/Fork
Spoon
Stove
Plates

I've already cut some of our vegetables, but I do want to talk for a minute about knife skills. Using knives can be dangerous if you aren't careful. Always use a cutting board. This knife is called a chef's knife, and is one of the most commonly used knives in the kitchen. Hold the knife where the blade meets the handle (demonstrate). Use your other hand to guide the food you are cutting, keeping your fingers curled to protect them.

Great! Now our vegetables are chopped and we're ready to start cooking.

In a frying pan, sauté the zucchini, peppers, and onion with the garlic and olive oil over medium high heat. Use a spatula to move the vegetables around so that they heat evenly. Cook for about 10 minutes. (Cook for a shorter time if you would like crunchier vegetables).

*Cooking Definition: Sauté- to cook quickly over high heat with a small amount of fat. Sauteeing is a great way to cooking vegetables with a lot less fat than frying.

Stove Safety- Caution participants about using the store. Pot handles should not face outward. Do not "dump" ingredients in, to avoid splashing hot oil. Do not leave the stove unattended.

Spread about 2 Tbsp of hummus on each tortilla. Sprinkle about 2 ½ Tbsp of cheese on each tortilla. Add about ½ cup fresh spinach on top of the hummus and cheese. Now, add the sautéed vegetables, placing the vegetables in the middle of the tortilla. Divide the vegetables evenly between all 6 tortillas. Roll up your tortillas with the veggies inside to make a delicious veggie wrap that is great for lunch or dinner! You may want to use a toothpick to make sure your wrap stays closed until you a ready to eat it.

This simple recipe can be changed to include your favorite vegetables! There are many different flavors of hummus in the grocery store. Try this recipe with different flavors until you find the one you like best! If you have leftovers, keep them in the refrigerator.

While the students are tasting:

Fresh, Frozen, or Canned: What's the Difference?
In this activity, the differences between fresh, frozen, and canned fruits and vegetables will be discussed by using a short true/false quiz with statements like "True or False; Frozen vegetables are not as good for you as fresh",etc. The quiz can be given on paper and then discussed or you can read the quiz aloud and ask participants to respond. (This activity seems to work best as a discussion in this situation. You can give them the quiz to take home, if they would like a copy)

Ask them how they like the wraps.

Invite them to tell you what they usually ate for lunch back in their home countries and what they usually eat for lunch now.

After students are done:

Thanks so much for coming today! It was so nice to meet you all, and I hope you will return next week! Before you leave, please answer our short after-class questionnaire. Have a nice evening!

Nutrition Focus Chart:

	What's in the Fruit Group?	How Much is needed?	Portion Size?	Health Benefits	Tips
Fruits	Apples, Bananas, Avocado, Cherries, Grapefruit, oranges, limes, watermelon, plums, pineapple, and many, many more.	Average: 2 cups	What counts as a cup? 1 cup of fruit or 100% fruit juice, 1 large peach, 1 large orange, 3 medium plums, 8 strawberries	Reduce risk for diseases like cardiovascular disease, diabetes, some cancers, bone loss. Important source of potassium fiber, vitamin C, folate. Low in fat, sodium, calories. No cholesterol.	Keep a bowl of fruit on the table, counter, or in the fridge. Buy fresh fruits in season. Buy dried, frozen, and canned so that you have a supply on hand. Vary your choices
Vegetables	Broccoli, collarg greens, spinach, lettuce, squash, beans, peas, asparagus, cabbage, tomatoes, okra, onions, turnips, potatoes, carrots, etc. etc.	Average: 2.5 cups	1 cup raw or cooked vegetables or vegetable juice, 2 cups raw leafy greens.	A diet rich in fruits and vegetables can reduce risk for stroke, cardiovascular disease, and type 2 diabetes. Vegetables are rich in fiber, with also reduced risk of coronary heart disease. Low in calories per cup. Rich in potassium and other vitamins and minerals.	Buy fresh vegetables in season. Stock up on frozen for quick cooking. Buy vegetables that are easy to prepare, like pre-washed salad greens. Vary your veggies choices to keep things interesting. Avoid heavy sauces and added salt.
Grains	Rice (white and brown), oatmeal, popcorn, cornmeal, cereal, pasta, bread, crackers, grits, tortillas, etc.	Average: 6 oz	1 slice of bread, 1 c cereal, ½ c cooked rice or pasta.	Food rich in fiber, such as whole grains, can reduce risk of cardiovascular disease. Grains are important souces of dietary fiber, B vitamins, and minerals	Substitute whole grains for refined grains when you can.

MyPyramid: Inside the Pyramid. United States Department of Agriculture. Internet: http://www.mypyramid.gov/pyramid/index.html Version current September 2010.

Veggie Wraps

This recipe is great for lunch or dinner. It is packed with lots of **vegetables.** This recipe uses tortillas- try to find **whole grain** tortillas if you can.

Ingredients:
(This recipe makes 6 wraps)
1 medium zucchini, sliced
1 green pepper, sliced
1 red pepper, sliced
1 small onion, sliced
1 Tbsp olive oil
1 clove garlic, chopped
3 cups spinach
1 container (7-8oz) hummus, any flavor
1 cup low fat mozzarella cheese, shredded
6 tortillas

Equipment:
Knife
Cutting board
Frying Pan
Spatula
Tongs/Fork
Spoon
Stove
Plates

In a frying pan, sauté the zucchini, peppers, and onion with the garlic and olive oil over medium high heat. Use a spatula to move the vegetables around so that they heat evenly. Cook for about 10 minutes. (Cook for a shorter time if you would like crunchier vegetables).
*__Cooking Definition__: Sauté- to cook quickly over high heat with a small amount of fat
Spread about 2 Tbsp of hummus on each tortilla. Sprinkle about 2 ½ Tbsp of cheese on each tortilla. Add about ½ cup fresh spinach on top of the hummus and cheese. Now, add the sautéed vegetables, placing the vegetables in the middle of the tortilla. Divide the vegetables evenly between all 6 tortillas. Roll up your tortillas with the veggies inside to make a delicious veggie wrap that is great for lunch or dinner! You may want to use a toothpick to make sure your wrap stays closed until you a ready to eat it.

This simple recipe can be changed to include your favorite vegetables! There are many different flavors of hummus in the grocery store. Try this recipe with different flavors until you find the one you like best!

Nutrition information: 208 Calories, 10.1g fat, 3.3g saturated fat, 10mg Cholesterol, 253mg Sodium, 21.2g Carbohydrates, 10.2 g protein, 5.1g fiber

Fresh, Frozen, Canned: What's the Difference?

Take this short true/false quiz to see what you know! Then, we'll discuss it together.

True or False:

_____ Frozen vegetables are not as nutritious as fresh vegetables.

_____ Canned fruits and vegetables can have more sodium and sugar in them.

_____ Canned vegetables have been cooked.

_____ Frozen vegetables can always be substituted for fresh vegetables.

_____ Frozen fruits can become mushy when they thaw.

Class 2: Chicken Nuggets, Green Bean, Mashed Potatoes

Overview:

- This lesson should take about an hour
- Nutrition Focus: Meat and beans; Vegetables (see Nutrition Focus Chart)
    - How much is needed?
    - What belongs in each group?
    - What foods do I eat now in these groups?
    - What foods could I add?
- Learning Activity: Food Demonstration: Baked chicken with mashed potatoes, green beans, and whole wheat bread. This demonstration will focus on basic measuring skills, how to prepare a nutritious dinner from "scratch", and where to find these foods for sale.
    - Cooking methods demonstrated: baking (chicken), boiling (mashed potatoes), steaming or boiling (green beans).
    - Cooking methods to mention: grilling, pan-frying

To prepare for this lesson:

- Review the nutrition focus sheet. Plan when you will mention this information.
- Check ingredient and equipment lists to make sure you have everything. Don't forget sampling utensils and plates, if needed
- Make sure that you have all the handouts that you need.
- Cut the chicken before class, but leave a bit to be done in front of the students so they can see proper knife skills. Do the same with the beans and potatoes.
- Start boiling the water for the potatoes before class, and put the potatoes in right before the class starts so that they are ready to mash right after you put the chicken in the oven. The order of the class should be (ideally): Prepare chicken. Put chicken in oven. Mash potatoes. Flip chicken. Cook green beans. Get chicken out of oven.
- Set out a pitcher of water with cups.

Introduction:

Thanks for coming to our cooking class today. I hope you will all enjoy it! First, we need to take care of a little paperwork. If today is your first class, you will need to fill out the consent form. A consent form is necessary because this series of cooking classes is part of a research project about nutrition education for international students. Hopefully, research like this will help us make this program long-lasting for future international students at UGA and other schools. Next is the participant information form, which is just a short questionnaire about your food habits, cooking skills, and background. You don't need to put your name on it, and if you come again next week you will not have to fill it out again. Before we start, we have a very short set of questions we would like you to answer before we get started about our particular program today.

Today we're making a recipe that is great for dinner. Who here has tried fried chicken before? Fried chicken is a very popular food here in the American South. However, it is breaded and fried which makes it a high calorie-high fat meal. It's okay to have friend chicken occaisionally. Today we're going to learn how to make a chicken dish that tastes similar to fried chicken but is baked in the oven, so it has less fat. We'll also look at a nutrient comparison between a regular

fried chicken meal and a baked chicken meal like this one. To go with our fried chicken, we're going to make some mashed potatoes and green beans as well.

Let's all wash our hands before we get started. Preparing food without washing your hands is an easy way to spread disease. Does anyone know how long we should wash out hands? Yes, about 20 seconds, using warm, soapy water.

Food Demonstration: Chicken Dinner: This demonstration will focus on basic measuring skills, how to prepare a healthier alternative to a popular meal, preparation methods (boiling, baking) and where to find these foods for sale.

(The nutrition focus for this lesson is meat and beans and vegetables. Use the information on the nutrition focus hand out as a spring board for discussion as you are preparing the food)

Oven Baked Chicken Nuggets
4 Servings
1 ¼ lbs boneless, skinless chicken breasts
1 sleeve of whole wheat Ritz crackers, crushed
1 Tbsp grilled chicken seasoning
1/3 cup flour
1 carton (6-8 oz) nonfat plain yogurt
1/3 cup skim milk
1 Tbsp Dijon mustard

Preheat oven to 400ºF. Spray a baking sheet with nonstick spray (or cover in nonstick aluminum foil). Place crushed crackers into a shallow bowl. In another bowl, mix yogurt, milk, and Dijon mustard until smooth. Place the flour into a sealable plastic bag. Cut chicken breasts into nugget-sized pieces (makes about 25-30 nuggets). Add 4 to 5 nuggets at a time to the bag of flour, sealing and shaking to coat. Then dip the flour-coated nuggets into the yogurt mixture, shaking off excess before adding them to the crushed crackers. Use fingers to help crackers stick to coated nuggets, and place onto baking sheet. Spray nonstick spray over nuggets, and bake for 6-8 minutes. Flip nuggets and bake for another 6-8 minutes, or until chicken is done. Serve with BBQ sauce or honey mustard.

**This recipe uses raw chicken. We have to be very careful when we work with raw meat like chicken to prevent the spread of disease. Always use separate cutting boards and knives for the chicken, and make sure to wash your hands before and after.

Recipe courtesy of Angie Ruhlen and the University Health Center.

Mashed Potatoes

Ingredients

1.5 lbs potatoes, peeled and quartered
1/2 teaspoon salt

2 tablespoons low fat cream cheese
2 tablespoons butter
1 tablespoon milk
Salt and pepper to taste

Put potatoes into a saucepan. Add 1/2 teaspoon salt. Add water until potatoes are covered. Bring to boil, reduce heat and simmer, covered, 15-20 minutes, or until done (you should be able to easily poke a fork through them)

Warm the cream cheese and butter, together, either in microwave or in a pan on the stove. Drain water from potatoes. Put hot potatoes into a bowl. Add cream cheese and melted butter. Use potato masher to mash potatoes until well mashed. Using a spoon to mix , add milk to achieve the desired consistency. Salt and pepper to taste.

Green Beans:

Green beans are easy to cook and are a delicious member of the vegetable group. You may have seen green beans or other vegetables swimming in butter or oil at a lot of American restaurants. Today we're going to cook our vegetables very lightly, with no butter, so you can see how they really taste. I think you'll like them!

1 lb green beans (fresh or frozen)

Salt and pepper to taste

If you are using fresh green beans: Wash beans thoroughly, using a colander to drain the water. Break or cut off the ends. Leave whole or cut into desired lengths.

Remember when we talked about fresh, frozen, and canned vegetables last week? Frozen green beans can also be substituted for fresh green beans

In a large saucepan over medium-high heat, bring water to a gentle boil. Add trimmed green beans and cook, uncovered, 4 to 5 minutes or until tender. If you would like your green beans to be less crisp, cook a little longer.

While students are tasting/after:

Nutrition Comparison (Per Serving)

	Baked Chicken Nuggets	Fried Chicken Breast (From Kentucky Fried Chicken)
Calories	260	360 calories
Total Fat	6g	21g
Saturated Fat	1.5g	5g
Sodium	230mg	1080 mg

How do you like this meal? Was it easy to make? Would you make this at home?

What did you usually eat for dinner back in your home countries and what do you usually eat for dinner now?

Does anyone have any other questions?

After students are done:

Thanks so much for coming today! It was so nice to meet you all, and I hope you will return next week! Before you leave, please answer our short after-class questionnaire. Have a nice evening!

Nutrition Focus Chart:

	What's in the Group?	How Much is needed?	Portion Size?	Health Benefits	Tips
Meat and Beans	Lean cuts of beef, ham, lamb, pork, veal, chicken, duck, goose, turkey, eggs, black beans, black eyed peas, lentils, fish, white beans, soy beans, nuts and seeds, shellfish	5.5 oz	1 oz of meat, 1/3 cup cooked dry beans, 1 egg, 1 tbsp peanut butter, ½ oz of nuts or seeds are all 1 oz equivalents.	Supply many nutrients like protein, B vitamins, vitamin E, iron, zinc, and magnesium, Watch out for high fat protein options! Include fish, nuts, and seeds to get essential fatty acids and omega 3's!	Aim for the leanest choices- round steaks and roasts. Top loin, top sirloin, chuck shoulder and arm roasts. Choose extra lean ground beef. Buy skinless or take off the skin, trip visible fat. Drain off fat during cooking, skip or limit breading. Broil, grill, roast, or boil.
Vegetables	Broccoli, collarg greens, spinach, lettuce, squash, beans, peas, asparagus, cabbage, tomatoes, okra, onions, turnips, potatoes, carrots, etc. etc.	Average: 2.5 cups	1 cup raw or cooked vegetables or vegetable juice, 2 cups raw leafy greens.	A diet rich in fruits and vegetables can reduce risk for stroke, cardiovascular disease, and type 2 diabetes. Vegetables are rich in fiber, with also reduced risk of coronary heart disease. Low in calories per cup. Rich in potassium and other vitamins and minerals.	Buy fresh vegetables in season. Stock up on frozen for quick cooking. Buy vegetables that are easy to prepare, like pre-washed salad greens. Vary your veggies choices to keep things interesting. Avoid heavy sauces and added salt.
Grains	Rice (white and brown), oatmeal, popcorn, cornmeal, cereal, pasta, bread, crackers, grits, tortillas, etc.	Average: 6 oz	1 slice of bread, 1 c cereal, ½ c cooked rice or pasta.	Food rich in fiber, such as whole grains, can reduce risk of cardiovascular disease. Grains are important souces of dietary fiber, B vitamins, and minerals	Substitute whole grains for refined grains when you can.

MyPyramid: Inside the Pyramid. United States Department of Agriculture. Internet: http://www.mypyramid.gov/pyramid/index.html Version current September 2010.

Oven Baked Chicken Nuggets
Green Beans
Mashed Potatoes

These recipes are great for dinner, and are a healthier twist on some Southern classics! Chicken is a great source of protein, and since this recipe uses skinless chicken breasts and isn't fried it has less fat traditional Southern Fried Chicken. Green Beans and mashed potatoes make the perfect vegetable combination to add to this meal. Serve with some whole grain rolls, and you've got a delicious Southern meal that you can feel good about eating!

Oven Baked Chicken Nuggets
Makes 4 servings
Ingredients:
1 ¼ lbs boneless, skinless chicken breast
1 sleeve of whole wheat Ritz crackers, crushed
1 Tbsp grilled chicken seasoning
1/3 cup flour
1 carton (6-8 oz) nonfat plain yogurt
1/3 cup skim milk
1 Tbsp Dijon mustard
Non-stick cooking spray

Optional: BBQ sauce or honey mustard

Equipment:
Baking sheet
Aluminum foil
Bowls
Spoon
Large, sealable plastic bag
Oven
Knife
Cutting Board
Spatula (for flipping)

Preheat oven to 400ºF. Spray a baking sheet with nonstick spray (or cover in nonstick aluminum foil). Place crushed crackers into a shallow bow with seasoningl. In another bowl, mix yogurt, milk, and Dijon mustard until smooth. Place the flour into a sealable plastic bag. Cut chicken breasts into nugget-sized pieces (makes about 25-30 nuggets). Add 4 to 5 nuggets at a time to the bag of flour, sealing and shaking to coat. Then dip the flour-coated nuggets into the yogurt mixture, shaking off excess before adding them to the crushed crackers. Use fingers to help crackers stick to coated nuggets, and place onto baking sheet. Spray nonstick spray over nuggets,

and bake for 6-8 minutes. Flip nuggets and bake for another 6-8 minutes, or until chicken is done. Serve with BBQ sauce or honey mustard.

Nutrition Information per serving (about 6-8 nuggets): 260 calories, 6g fat(1.5 g saturated fat), 1g dietary fiber, 33g protein, 230 mg sodium, 80 mg cholesterol.

Recipe courtesy of Angie Ruhlen and the University Health Center.

Mashed Potatoes

Makes 4 servings
Ingredients:
1 ½ lbs potatoes, peeled and quartered length-wise
½ teaspoon salt
2 Tbsp low fat cream cheese
2 Tbsp butter
1 Tbsp skim milk
Salt and pepper

Equipment:
Saucepan
Spoon
Colander
Bowl
Potato Masher
Vegetable peeler

Put potatoes into a saucepan. Add 1/2 teaspoon salt. Add water until potatoes are covered. Bring to boil, reduce heat and simmer, covered, 15-20 minutes, or until done (you should be able to easily poke a fork through them)

Warm the cream cheese and butter, together, either in microwave or in a pan on the stove. Drain water from potatoes using a colander. Put hot potatoes into a bowl. Add cream and melted butter. Use potato masher to mash potatoes until well mashed. Using a spoon to mix, add milk to achieve the desired consistency. Salt and pepper to taste.

Nutrition Information per serving: 170 calories, 6.9 g fat (3.7 g saturated fat), 343 mg sodium, 3.0g protein, 15 mg cholesterol

Green Beans

Makes 4 servings

Ingredients:

1 lb green beans (fresh or frozen)

Salt and pepper to taste

Equipment:

Saucepan or pot
Stovetop
Colander
Knife
Cutting board

If you are using fresh green beans: Wash beans thoroughly, using a colander to drain the water. Break or cut off the ends. Leave whole or cut into desired lengths.

Frozen green beans can also be substituted for fresh green beans

In a large saucepan over medium-high heat, bring water to a gentle boil. Add trimmed green beans and cook, uncovered, 4 to 5 minutes or until tender. If you would like your green beans to be less crisp, cook a little longer.

Nutrition Information: (per serving, ½ cup cooked): 22 calories, 1.18g protein, 0g Fat, 2g dietary fiber, 598mg Sodium (with salt)

Class 3: Fruit and Yogurt Parfaits, Fruit Salad

Overview

- This lesson should last one hour.
- Nutrition Focus: Milk, Fruit, and Grains: Nutrition Focus chart
    - How much is needed?
    - What belongs in each group?
    - What foods do I eat now in these groups?
    - What foods could I add?
- The importance of breakfast- Breakfast is important because it gives you energy for the rest of the day. Eating breakfast helps you to not be as hungry later in the day, so it is easier to avoid overeating. Eating breakfast will help you to stay on track making healthy decisions during the day.
- Discussion: What do you eat for breakfast where you are from?
- Discussion: Commonly eaten breakfast foods in the United States- Ask students what foods they have seen Americans eating for breakfast, and what they think of these choices. What American breakfast foods do they think are healthy? Unhealthy? How have they changed what they eat for breakfast since their arrival in the United States.
- Learning Activity: Food Demonstration : Fruit and Yogurt Parfaits, Fruit Salad

To Prepare for this Lesson:

- Review the nutrition focus sheet. Plan when you will mention this information.
- Check ingredient and equipment lists to make sure you have everything. Don't forget sampling utensils and plates, if needed
- Make sure that you have all the handouts that you need.
- Set out a pitcher of water with cups.

Introduction:

Thanks for coming to our cooking class today. I hope you will all enjoy it! First, we need to take care of a little paperwork. If today is your first class, you will need to fill out the consent form. A consent form is necessary because this series of cooking classes is part of a research project about nutrition education for international students. Hopefully, research like this will help us make this program long-lasting for future international students at UGA and other schools. Next is the participant information form, which is just a short questionnaire about your food habits, cooking skills, and background. You don't need to put your name on it, and if you come again next week you will not have to fill it out again. Before we start, we have a very short set of questions we would like you to answer before we get started about our particular program today.

Today we're making two recipes: One that is great for breakfast and another that is great for a side dish, snack, or even a light dessert! They have similar ingredients. Let's all wash our hands before we get started. Preparing food without washing your hands is an easy way to spread disease. Does anyone know how long we should wash out hands? Yes, about 20 seconds, using warm, soapy water.

This demonstration will focus on basic measuring skills, how to prepare a quick, nutritious lunch, and where to find these foods for sale. Note that the recipe does not have to be followed exactly- students can use whatever fruits that they like!

(Show the students the fruits that will be used as you are talking. Use the information on the nutrition focus sheet to guide your discussion of fruits and whole grains. Tell the students WHERE you bought the fruits and other ingredients and in what part of the grocery store they can find them as you use them. Remind them to wash their fruits before using them.)

32 oz nonfat plain yogurt
2 Tbsp honey
2 large bananas, chopped
1.5 cups chopped frozen peaches
½ cup shredded coconut
2 cups granola cereal

I've already cut some of our fruit, but I do want to talk for a minute about knife skills. Using knives can be dangerous if you aren't careful. Always use a cutting board. This knife is called a chef's knife, and is one of the most commonly used knives in the kitchen. Hold the knife where the blade meets the handle (demonstrate). Use your other hand to guide the food you are cutting, keeping your fingers curled to protect them

5-6 servings
In a mixing bowl, combine the yogurt and honey. Cut up the banana and peaches and mix them in another bowl. In parfait glasses (regular glasses or bowls work fine too!) layer the ingredients in the following order: Yogurt, banana/peaches, granola, yogurt, banana/peaches, and granola. Top with a sprinkling of shredded coconut.

Easy Fruit Salad
Makes 12 servings
3 large Gala or Fuji apples
1 cup red grapes, halved
3 bananas
1 container (6 oz) fat free light Honey Almond yogurt (or vanilla flavor)
Dice apples into ½ cubes. Cut bananas into slices. Carefully mix together apples, bananas and grape halves with yogurt. Serve immediately, or store in refrigerator.
Nutrition information per serving: 80 calories, 0g fat, 2g dietary fiber, 1g protein, 10mg sodium, 0mg cholesterol. Daily Values: Vitamin C 10%.

While students are tasting/after:

How do you like these recipes? Were they easy to make? Would you make this at home?

What did you usually eat for breakfast/snacks back in your home countries and what do you usually eat for breakfast/snacks now?

Does anyone have any other questions?

After students are done:

Thanks so much for coming today! It was so nice to meet you all, and I hope you will return next week! Before you leave, please answer our short after-class questionnaire. Have a nice evening!

Nutrition Focus Chart:

	What's in the Fruit Group?	How Much is needed?	Portion Size?	Health Benefits	Tips
Fruits	Apples, Bananas, Avocado, Cherries, Grapefruit, organges, limes, watermelon, plums, pineapple, and many, many more.	Average: 2 cups	What counts as a cup? 1 cup of fruit or 100% fruit juice, 1 large peach, 1 large orange, 3 medium plums, 8 strawberries	Reduce risk for diseases like cardiovascular disease, diabetes, some cancers, bone loss. Important source of potassium fiber, vitamin C, folate. Low in fat, sodium, calories. No cholesterol.	Keep a bowl of fruit on the table, counter, or in the fridge. Buy fresh fruits in season. Buy dried, frozen, and canned so that you have a supply on hand. Vary your choices
Milk	Milk, cheese, yogurt, milk based deserts	Average: 3 cups	1 cup milk, 8 oz yogurt, 1.5 ounces cheese, 1 cup pudding or frozen yogurt.	May reduce bone loss, risk of osteoporosis. Diets that include milk products tend to have a higher overall nutritional quality. Important nutrients in this group are calcium, vitamin D, potassium. Choose low-fat sources to avoid consuming too much saturated fat.	Drink milk as a beverage, make low-fat choices, yogurt as a snack.
Grains	Rice (white and brown), oatmeal, popcorn, cornmeal, cereal, pasta, bread, crackers, grits, tortillas, etc.	Average: 6 oz	1 slice of bread, 1 c cereal, ½ c cooked rice or pasta.	Food rich in fiber, such as whole grains, can reduce risk of cardiovascular disease. Grains are important souces of dietary fiber, B vitamins, and minerals	Substitute whole grains for refined grains when you can.

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Fruit and Yogurt Parfaits

This recipe is great for breakfast or for a healthy snack during the day! The yogurt, which is part of the **milk** group, is a good nonfat source of calcium and vitamin D. The bananas and peaches in this recipe will help you include some **fruit** in your breakfast. A diet rich in fruits and vegetables can help decrease your risk of developing certain diseases, like cardiovascular disease and diabetes. Granola cereal can be higher in calories than some cereals, but it is a source of **whole grain**, and in smaller serving sizes can fit into your nutritious breakfast. In this recipe, each recipe has about 1/3 c granola.

Ingredients:
(This recipe makes 5-6 servings)

32 oz nonfat plain yogurt
2 Tbsp honey
2 large bananas, chopped
1.5 cups chopped frozen peaches
½ cup shredded coconut
2 cups granola cereal

Materials/Equipment:
Mixing bowls
Glasses or bowls for serving
Spoons (for mixing and serving)
Knife

In a mixing bowl, combine the yogurt and honey. Cut up the banana and peaches and mix them in another bowl. In parfait glasses (regular glasses or bowls work fine too!) layer the ingredients in the following order: Yogurt, banana/peaches, granola, yogurt, banana/peaches, and granola. Top with a sprinkling of shredded coconut.
Nutrition Information: 386 Calories, 14.6g fat, 5.2g saturated fat, 118mg sodium, 15.1g protein

Easy Fruit Salad
Makes 12 servings

Ingredients:
3 large Gala or Fuji apples
1 cup red grapes, halved
3 bananas
1 container (6 oz) fat free light Honey Almond yogurt (or vanilla flavor)

Equipment:
Bowl
Spoon
Knife
Cutting Board

Dice apples into ½ cubes. Cut bananas into slices. Carefully mix together apples, bananas and grape halves with yogurt. Serve immediately, or store in refrigerator.

Nutrition information per serving: 80 calories, 0g fat, 2g dietary fiber, 1g protein, 10mg sodium, 0mg cholesterol. Daily Values: Vitamin C 10%.

Class 4: Chocolate Chip Cookies

Overview:

- This lesson should take one hour
- Nutrition Focus: Oils, Whole Grains, Recipe Substitutions
- Food Demonstration: Chocolate Chip Cookies w/ Nutrition facts comparison
- Recipe substitutions

To prepare for this lesson:

- Review the lesson.
- Check ingredient and equipment lists to make sure you have everything. Don't forget sampling utensils and plates, if needed
- Make sure that you have all the handouts that you need.
- Set out a pitcher of water with cups. Do not put ice in the water as many students from Asian countries will not drink it if there is ice.
- Prepare examples of substituted items

Introduction:

Thanks for coming to our cooking class today. I hope you will all enjoy it! First, we need to take care of a little paperwork. If today is your first class, you will need to fill out the consent form. A consent form is necessary because this series of cooking classes is part of a research project about nutrition education for international students. Hopefully, research like this will help us make this program long-lasting for future international students at UGA and other schools. Next is the participant information form, which is just a short questionnaire about your food habits, cooking skills, and background. You don't need to put your name on it, and if you come again next week you will not have to fill it out again. Before we start, we have a very short set of questions we would like you to answer before we get started about our particular program today.

Today we are going to talk about desserts and how to make some American desserts a little healthier. What kind of things do you eat for dessert in your country? What do you think of the desserts you have tried here? Sometimes people think that eating healthy means never eating desserts, but that is not true. It is true that many American desserts are high in sugar and fat, so it's good to limit your consumption of these foods. Eating dessert occasionally is fine! . Let's all wash our hands before we get started. Preparing food without washing your hands is an easy way to spread disease. Does anyone know how long we should wash out hands? Yes, about 20 seconds, using warm, soapy water.

Chocolate chip cookies are a very popular dessert here. Have you tried them? Today we are going to make chocolate chip cookies just a little healthier by decreasing the calories, fat, sugar, and sodium, and increasing whole grains and fiber. Your handout shows a traditional chocolate chip cookie recipe and our modified version. We're going to use whole wheat flour and oatmeal

instead of white flour to help incorporate whole grains in our diet. These cookies also have a little less sugar and use apple sauce as a substitute for half the fat in the recipe.

Makes 30 cookies
Serving Size: 1 cookie

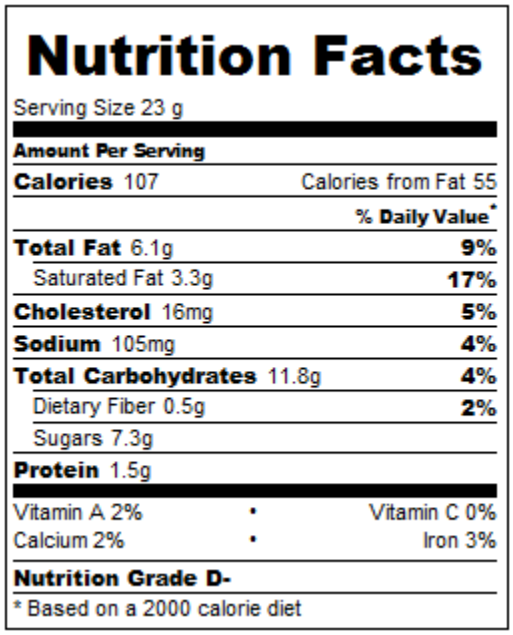
3/4 cup rolled oats
1 cup whole-wheat flour
1/4 teaspoon baking soda
1/2 teaspoon salt
1/4 cup butter, softened
1/4 cup applesauce
1/4 cup granulated sugar
1/4 cup brown sugar
1 large egg
1 teaspoon vanilla extract
1 cup chocolate chips
Preheat oven to 350°F. Coat 2 baking sheets with cooking spray.
In a bowl, mix flour, baking soda and salt. Combine melted butter, applesauce, granulated sugar, brown sugar, egg and vanilla; beat until smooth and creamy. Add dry ingredients including oatmeal, mixing until just combined. Stir in chocolate chips. Drop the dough by heaping teaspoonfuls, at least 1 inch apart, onto the prepared baking sheets. Bake cookies, 1 sheet at a time, until firm around the edges and golden on top, about 15 minutes. Cool the cookies for 2 minutes on the baking sheets, then transfer to wire racks to cool completely.

Per cookie: 86 calories; 3.8 g fat (1.4 g sat); 8 mg cholesterol; 11.6 g carbohydrates; 1.3 g protein; 0.5 g fiber; 48 mg sodium.

These cookies have less sugar and fat in them than regular chocolate chip cookies. They also use whole wheat flour instead of white flour, which means these cookies include whole rather than refined grains. Let's look at common recipe for chocolate chip cookies and see how it compares. (See handout)

Nutrition Information Comparison:

Regular Chocolate Chip Cookies: Our Modified Recipe:



Nutrition Facts

Serving Size 23 g

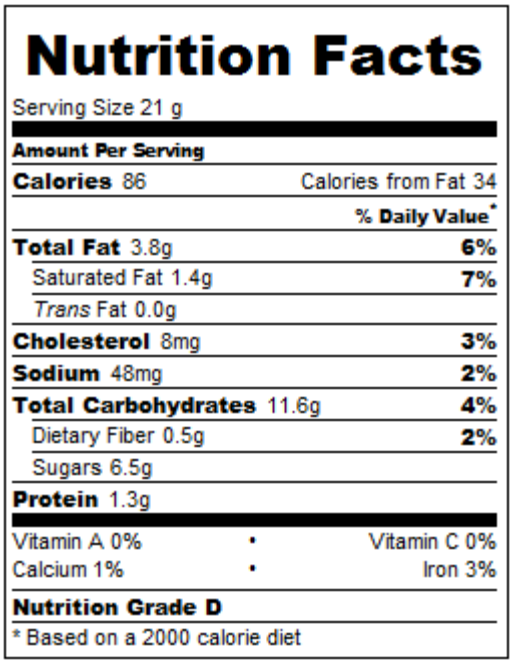
Amount Per Serving

Calories 107	Calories from Fat 55
	% Daily Value*
Total Fat 6.1g	**9%**
Saturated Fat 3.3g	**17%**
Cholesterol 16mg	**5%**
Sodium 105mg	**4%**
Total Carbohydrates 11.8g	**4%**
Dietary Fiber 0.5g	**2%**
Sugars 7.3g	
Protein 1.5g	

Vitamin A 2% • Vitamin C 0%
Calcium 2% • Iron 3%

Nutrition Grade D-

* Based on a 2000 calorie diet



Nutrition Facts

Serving Size 21 g

Amount Per Serving

Calories 86	Calories from Fat 34
	% Daily Value*
Total Fat 3.8g	**6%**
Saturated Fat 1.4g	**7%**
Trans Fat 0.0g	
Cholesterol 8mg	**3%**
Sodium 48mg	**2%**
Total Carbohydrates 11.6g	**4%**
Dietary Fiber 0.5g	**2%**
Sugars 6.5g	
Protein 1.3g	

Vitamin A 0% • Vitamin C 0%
Calcium 1% • Iron 3%

Nutrition Grade D

* Based on a 2000 calorie diet

Images from: Calorie Count. Recipe Analysis. Version current September 2011. Internet: www.caloriecount.com

While out cookies are baking, lets talk a little bit about recipe substitutions. Each of you has a chart that shows some healthier recipe substitutions you might like to try as you experiment with cooking. (See Recipe Subsitution Chart)

I hope you all have enjoyed this lesson! If you have any questions, please feel free to email me, or check out this handout for more information! (See handout: Where Can I Find More Information?

Chocolate Chip Cookies

Today we are going to make chocolate chip cookies just a little healthier by decreasing the calories, fat, sugar, and sodium, and increasing whole grains and fiber. This recipe uses whole wheat flour and oatmeal instead of white flour to help incorporate whole grains in our diet. These cookies also have a little less sugar and use apple sauce as a substitute for half the fat in the recipe.

Makes 30 cookies
Serving Size: 1 cookie

Ingredients:
3/4 cup rolled oats
1 cup whole-wheat flour
1/4 teaspoon baking soda
1/2 teaspoon salt
1/4 cup butter, softened
1/4 cup applesauce
1/4 cup granulated sugar
1/4 cup brown sugar
1 large egg
1 teaspoon vanilla extract
1 cup chocolate chips

Equipment:
Mixing Bowls
Spoon/Spatula
Oven
Cookie Sheets

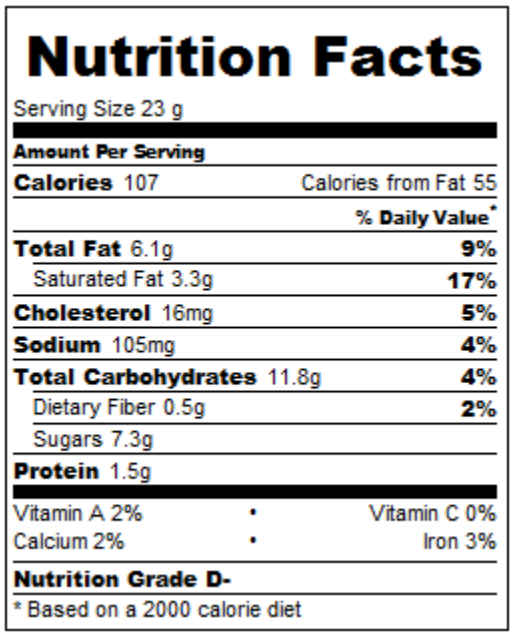
Preheat oven to 350°F. Coat 2 baking sheets with cooking spray.
In a bowl, mix flour, baking soda and salt. Mix melted butter with the applesauce, granulated sugar, brown sugar, egg and vanilla; beat until smooth and creamy. Add the dry ingredients including oatmeal, mixing until just combined. Stir in chocolate chips. Drop the dough by heaping teaspoonfuls, at least 1 inch apart, onto the prepared baking sheets. Bake cookies, 1 sheet at a time, until firm around the edges and golden on top, about 15 minutes. Cool the cookies for 2 minutes on the baking sheets, then transfer to wire racks to cool completely.

Per cookie: 86 calories; 3.8 g fat (1.4 g sat); 8 mg cholesterol; 11.6 g carbohydrates; 1.3 g protein; 0.5 g fiber; 48 mg sodium.

These cookies have less sugar and fat in them than regular chocolate chip cookies. They also use whole wheat flour instead of white flour, which means these cookies include whole rather than refined grains. Let's look at common recipe for chocolate chip cookies and see how it compares!

Nutrition Information Comparison:

Regular Chocolate Chip Cookies:



Nutrition Facts	
Serving Size 23 g	
Amount Per Serving	
Calories 107	Calories from Fat 55
	% Daily Value*
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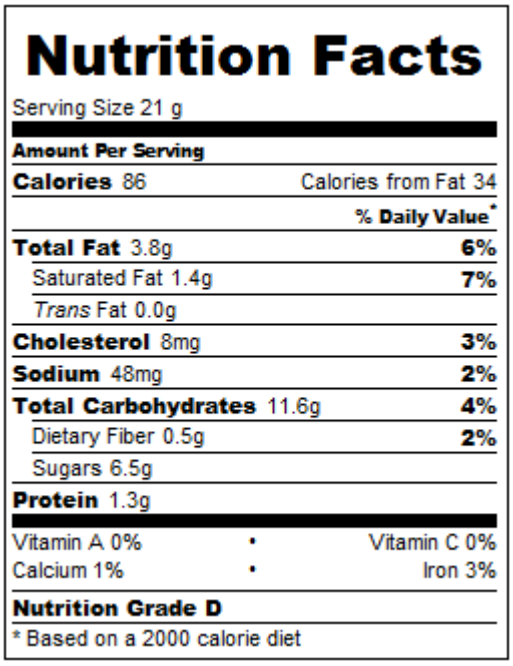
Saturated Fat 3.3g	**17%**
Cholesterol 16mg	**5%**
Sodium 105mg	**4%**
Total Carbohydrates 11.8g	**4%**
Dietary Fiber 0.5g	**2%**
Sugars 7.3g	
Protein 1.5g	
Vitamin A 2% •	Vitamin C 0%
Calcium 2% •	Iron 3%
Nutrition Grade D-	
* Based on a 2000 calorie diet	

Our Modified Recipe:



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Total Fat 3.8g	**6%**
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Cholesterol 8mg	**3%**
Sodium 48mg	**2%**
Total Carbohydrates 11.6g	**4%**
Dietary Fiber 0.5g	**2%**
Sugars 6.5g	
Protein 1.3g	
Vitamin A 0% •	Vitamin C 0%
Calcium 1% •	Iron 3%
Nutrition Grade D	
* Based on a 2000 calorie diet	

Images from: Calorie Count. Recipe Analysis. Version current September 2011. Internet: www.caloriecount.com

RECIPE SUBSTITUTION CHART

If your recipe calls for this ingredient:	Try substituting this ingredient:
Butter, margarine, shortening or oil in baked goods	Applesauce or prune puree for half of the called-for butter, shortening or oil; butter spreads or shortenings specially formulated for baking that don't have trans fats Note: To avoid dense, soggy or flat baked goods, don't substitute oil for butter or shortening. Also don't substitute diet, whipped or tub-style margarine for regular margarine.
White Bread	Whole Wheat or Whole Grain Bread
Bread Crumbs	Rolled oats or crushed bran cereal
Butter, margarine, shortening or oil to prevent sticking	Non-stick cooking spray
Cream Cheese	Fat-free or low-fat cream cheese, Neufchatel, or low-fat cottage cheese pureed until smooth
Cream	Fat-free half-and-half, evaporated skim milk
Eggs	Two egg whites or 1/4 cup egg substitute for each whole egg
Flour, all-purpose (plain)	Whole-wheat flour for half of the called-for all-purpose flour in baked goods Note: Whole-wheat pastry flour is less dense and works well in softer products like cakes and muffins.
Sugar	In most baked goods you can reduce the amount of sugar by one-half; intensify sweetness by adding vanilla, nutmeg or cinnamon
Syrup	Pureed fruit, such as applesauce, or low-calorie, sugar-free syrup
Milk, evaporated	Evaporated skim milk
Milk, whole	Reduced-fat or fat-free milk
Yogurt, fruit-flavored	Plain yogurt
Sour cream, full fat	Fat-free or low-fat sour cream, plain fat-free or low-fat yogurt

Adapted from: The Mayo Clinic. Healthy recipes: A guide to ingredient substitutions. Version current 23 November 2010. Internet: http://www.mayoclinic.com/health/healthy-recipes/NU00585

Recipes and Nutrition Tips: Where Can I Find More Information?

There are many sources for food and nutrition information on the internet. Here are a few suggestions to get you started as you explore!

On the Web:

www.mypyramid.gov- If you have basic questions about nutrition, this website is a great place to start.

http://www.fightbac.org/- This website has useful information about food safety.

http://www.cookinglight.com/- This website is filled with recipes that are often healthy and delicious. Nutrition information is usually provided.

http://www.mayoclinic.com/health/healthy-recipes/RecipeIndex - The Mayo Clinic offers many healthy recipes online

On Campus:

Check out the health center website to see when cooking classes, taught by Registered Dietitian Angie Ruhlen, are scheduled. http://www.uhs.uga.edu/nutrition/kitchen.html

Email your Food Voyage instructor, Courtney, at courtms@uga.edu

APPENDIX B

PARTICIPANT INFORMATION FORM

Food Voyage: Nutrition Education for International Students

Participant Information Form

Name: _____

1. What is your native country? _____

2. What is your age? _____ years

3. Gender:
   a. Male
   b. Female

4. Are you a(n):
   a. Undergraduate Student
   b. Graduate Student
   c. Spouse of an international student

5. How long have you been in the United States?
   a. Less than 3 months
   b. 3-6 months
   c. 6 months to 1 year
   d. 1 to 2 years
   e. Longer than 2 years

6. Do you have any food allergies? If so, please list the foods you are allergic to. This is so we can make sure you do not come into contact with these foods during the food sampling or food demonstrations.

_____
_____

7. Do you have a place to prepare food in your house or apartment? ____YES ____NO

8. In your house or apartment, do you have a stove? _____ YES _____ NO

9. In your house or apartment, do you have an oven? _____ YES _____ NO

10. In your house or apartment, do you have a microwave oven? ____ YES _____ NO

11. In your house or apartment, do you have a sink? _____ YES _____ NO

12. In your house or apartment, do you have a refrigerator? _____ YES _____NO

13. Please indicate how much you agree with this statement: I am comfortable speaking and reading English.

a. Strongly Agree
b. Agree
c. Undecided
d. Disagree
e. Strongly Disagree

14. In general, what language(s) are used in movies, T.V. and radio programs you most often watch and listen to?

a. All in English
b. Mostly English
c. About half English, half other language(s)
d. Mostly in language(s) other than English
e. All in language(s) other than English

15. Before you came to the United States, how often did you prepare your own meals?

a. Frequently
b. Occasionally
c. Rarely

d. Never

16. How often do you prepare your own meals now?
    a. Frequently
    b. Occasionally
    c. Rarely
    d. Never

17. How often do you eat at restaurants that serve food other than the food of your home country?
    a. Frequently
    b. Occasionally
    c. Rarely
    d. Never

18. How often do you eat what you would consider American foods?
    a. Frequently
    b. Occasionally
    c. Rarely
    d. Never

19. If you prepare food at home, what kind of food do you prepare?
    a. Food commonly eaten in my country
    b. Some food commonly eaten in my country, and some food commonly eaten in the United States
    c. Food commonly eaten in the United States.
    d. I do not prepare food at home.

APPENDIX C

PRE- AND POST- CLASS QUESTIONNAIRES

Class 1: Pre-class Questionnaire

Have you attended any Food Voyage Cooking Classes before? _____ Yes ____ No
If you have, how many? _____

1. I know how to use a knife properly and safely.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

2. I know how to sauté vegetables.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

3. I am confident that I can prepare a nutritious meal for myself or my family.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

Class 1: Post-Class Questionnaire

1. I know how to use a knife properly and safely.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

2. I know how to sauté vegetables.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

3. I am confident that I can prepare a nutritious meal for myself or my family.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

4. I am confident that I could make the recipe we made today, Veggie Wraps, on my own at home.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

Class 2: Pre-Class Questionnaire

Have you attended any Food Voyage cooking classes before? _____ Yes _____No
If you have, how many? _____

1. I know how to properly measure ingredients for recipes using measuring cups and spoons.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

2. I know how to safely handle and cook raw meats, such as chicken.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

3. I know how to cook vegetables by boiling.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

4. I am confident that I can prepare a nutritious meal for myself or my family.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

Class 2: Post-Class Questionnaire

1. I know how to properly measure ingredients for recipes using measuring cups and spoons.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree
2. I know how to safely handle and cook raw meats, such as chicken.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree
3. I know how to cook vegetables by boiling.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

4. I am confident that I can prepare a nutritious meal for myself or my family.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree
5. I am confident that I could make the recipes we made today, Baked Chicken Nuggets, Green Beans, and Mashed Potatoes, on my own at home.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

Class 3: Pre-Class Questionnaire

Have you attended any Food Voyage cooking classes before? _____ Yes _____No
If you have, How many? _____

1. I know how to use a knife properly and safely.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

2. I know where to find fruits and vegetables in the grocery store.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

3. I am confident that I can prepare a nutritious meal for myself or my family.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

Class 3: Post-Class Questionnaire

1. I know how to use a knife properly and safely.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

2. I know where to find fruits and vegetables in the grocery store.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

3. I am confident that I can prepare a nutritious meal for myself or my family.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

4. I am confident that I could make the recipes we made today, fruit parfaits and fruit salad, on my own at home.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

Class 4: Pre-Class Questionnaire

Have you attended any Food Voyage cooking classes before? _____ Yes _____No
If you have, How many? _____

1. I know how to properly measure ingredients for recipes using measuring cups and spoons.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

2. I know how to use an oven to bake foods like muffins, cookies, cakes, or breads.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

3. I know where to look to find information on food, cooking, and nutrition.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

4. I am confident that I can make substitutions for ingredients in dessert recipes to make the recipe healthier.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

Class 4: Post-Class Questionnaire

1. I know how to properly measure ingredients for recipes using measuring cups and spoons.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

2. I know how to use an oven to bake foods like muffins, cookies, cakes, or breads.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

3. I know where to look to find information on food, cooking, and nutrition.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

4. I am confident that I can make substitutions for ingredients in dessert recipes to make the recipe healthier.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

5. I am confident that I could make the recipe we made today, Whole Wheat Chocolate Chip Cookies, on my own at home.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

APPENDIX D

PARTICIPANT FEEDBACK SURVEY

Food Voyage: Nutrition Education for International Students
Participant Feedback Survey

1. Did you find this program to be helpful?
    a. Very helpful
    b. Somewhat helpful
    c. Not sure
    d. Somewhat unhelpful
    e. Not helpful

2. How did you feel about the length of the sessions?
    a. Too long
    b. Acceptable
    c. Too short

3. Did you feel that this program addressed topics that were important to you?

4. Were there any parts of the program that were difficult to understand? If so, please explain.

5. What helped you learn?

6. What did not help you learn?

What suggestions do you have for the improvement of the program?

APPENDIX E

SIX-MONTH FOLLOW-UP QUESTIONNAIRE

Food Voyage: Nutrition Education for International Students
6 Month Follow-up Questionnaire

1. I know how to use a knife properly and safely.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

2. I know how to sauté vegetables.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

3. I know how to properly measure ingredients for recipes using measuring cups and spoons.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

4. I know how to safely handle and cook raw meats, such as chicken.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

5. I know how to cook vegetables by boiling.
    1. Strongly Agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly Disagree

6. I know where to find fruits and vegetables in the grocery store.

1. Strongly Agree
2. Agree
3. Undecided
4. Disagree
5. Strongly Disagree

7. I know how to use an oven to bake foods like muffins, cookies, cakes, or breads.

1. Strongly Agree
2. Agree
3. Undecided
4. Disagree
5. Strongly Disagree

8. I know where to look to find information on food, cooking, and nutrition.

1. Strongly Agree
2. Agree
3. Undecided
4. Disagree
5. Strongly Disagree

9. I am confident that I can make substitutions for ingredients in dessert recipes to make the recipe healthier.

1. Strongly Agree
2. Agree
3. Undecided
4. Disagree
5. Strongly Disagree

10. I am confident that I can prepare a nutritious meal for myself or my family.

1. Strongly Agree
2. Agree
3. Undecided
4. Disagree
5. Strongly Disagree

11. I have used one or more of recipes I learned in the Food Voyage program at home.

1. Strongly Agree
2. Agree
3. Undecided
4. Disagree
5. Strongly Disagree

APPENDIX F

CONSTRUCT VALIDITY CHART

Table F.1: Construct Validity

Class/Recipe	Objectives (Apply to all classes)	Skills Focus	Nutrition Focus	Questionnaire Item A
1- Veggie Wraps	-Learn how to prepare basic recipes. -Understand how preparation methods and ingredient choices can make foods more or less healthy. -Understand similarities and differences between their traditional diet and a more Western diet. -Learn places where they can grocery shop locally. -Learn strategies for grocery shopping. -Be able to apply the cooking and nutrition skills learned to other recipes. Integration: -Understand how shopping and food preparation impacts healthy eating behaviors. -Be able to assess their own eating habits and feel confident about making changes, if necessary. -Develop relationships with other students who may have more experience and will feel comfortable asking and giving help. -Feel confident in their ability to prepare nutritious food for themselves and others. -Feel confident that they can make healthy food choices in any environment. -Be excited about trying new foods. -Not be intimidated by shopping and meal preparation. -Be able to locate resources for further instruction.	-Knife skills -Sautéing	-Fruit -Vegetables -Grains	-I know how to use a knife properly and safely -I know how to sauté vegetables -I am confident that I can prepare a nutritious meal for myself or my family -I am confident that I could make the recipe we made today, Veggie Wraps, on my own at home
2- Baked Chicken Nuggets Green Beans Mashed Potatoes		-Measuring skills -Safe handling of raw meat -Boiling	-Meat and beans -Vegetables	- I know how to properly measure ingredients for recipes using measuring cups and spoons - I know how to safely handle and cook raw meats, such as chicken - I know how to cook vegetables by boiling - I am confident that I can prepare a nutritious meal for myself or my family - I am confident that I could make the recipes we made today, Baked Chicken Nuggets, Green Beans, and Mashed Potatoes, on my own at home
3- Fruit and Yogurt Parfaits Fruit Salad		-Knife Skills -Finding produce in the grocery store	-Milk -Grains -Fruit	-I know how to use a knife properly and safely - I know where to find fruits and vegetables in the grocery store - I am confident that I can prepare a nutritious meal for myself or my family - I am confident that I could make the recipes we made today, fruit parfaits and fruit salad, on my own at home
4- Whole Wheat Chocolate Chip Cookies		-Baking -Finding reliable nutrition information -Making substitutions in desert recipes	-Grains -Oils -Recipe substitution	- I know how to properly measure ingredients for recipes using measuring cups and spoons - I know how to use an oven to bake foods like muffins, cookies, cakes, or breads - I know where to look to find information on food, cooking, and nutrition - I am confident that I can make substitutions for ingredients in dessert recipes to make the recipe healthier - I am confident that I could make the recipe we made today, Whole Wheat Chocolate Chip Cookies, on my own at home

[a] Scores were based on a series of Likert scale type questions; 1= Strongly Agree, 2=Agree, 3= Undecided, 4= Disagree, 5= Strongly Disagree.