

## Cook Like a Chef 1- and 4-Week Camp Models

### Abstract

Children participating in cooking classes gain confidence in their abilities to prepare food. If children are to make informed, healthy, food ingredient and cooking method choices, they need to be equipped with these necessary skills, as well as with nutrition competence. Extension programs that incorporate nutrition and hands-on cooking can present a challenge; yet with tools and support this mission can be accomplished with ease and finesse.

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## Introduction

Positive changes to the family mealtime environment that impact dietary intake and obesity rates can be realized when adolescent children are involved in the choice and preparation of family meals. A recent study suggested parents would like their early adolescent children to participate more in meal preparation but often avoid engaging them because of the time commitment of teaching and the potential messiness involved (Fulkerson, Kubik, Boutelle, Garwick, Story, Newmark-Sztainer, & Dudovitz, 2011). Children participating in cooking classes gain confidence in their abilities to prepare food, which may transfer into playing a more active role in the preparation of family meals (Woodruff & Kirby, 2013). Learning how to cook is important because one can learn early on how to work responsibly in the kitchen in the preparation of healthy meals and snacks. If early adolescent individuals are to make informed, healthy food choices, they need to be equipped with the necessary knowledge and skills about food and nutrition (Condrasky & Hegler, 2010; Drummond, 2011). Cooking classes vary in length, rigor, level of hands-on activity provided, and leadership.

The Cook Like a Chef program, based on an interactive cooking camp curriculum developed and tested over the past 12 years in a university setting, exposes its young participants (ages 10- 14 years) to culinary techniques and nutrition messages in an interactive kitchen environment. It also enhances the participants' perceived motivation and confidence in preparing and consuming more vegetables,

fruits, and whole grains (Condrasky, Corr, & Cason, 2007; Condrasky, Corr, Sharp, Hegler, & Warmin, 2010). Through addressing knowledge gaps related to awareness of and preparation of healthy foods in an interactive format, participants are more motivated to intentionally develop healthier lifestyles.

The Cook Like a Chef program has its theoretical foundation in the Social Cognitive Theory (SCT). According to Bandura (1986), the SCT is defined as the confidence a person has in his or her ability to pursue a behavior. Studies have shown that cooking camps can influence cooking confidence and help individuals make healthier food choices. At these camps, SCT supports early adolescent participants' increased cooking confidence as documented in areas of preparing healthy snacks, using healthy cooking techniques, eating healthy foods, and having a positive attitude toward food (Condrasky 2010, Dixon, Condrasky, Sharp, & Corr, 2013). Self-efficacy, a leading concept in SCT, is often used to guide the development of nutrition behavior interventions. Preparing healthy snacks, using healthy cooking techniques, eating healthy foods, and having a positive attitude toward food can transfer learning between the environment of camp and the home setting (Dixon, Condrasky, Corr, Kemper, & Sharp, 2014). Increased confidence has been observed in previous camp research settings for cooking techniques, limiting fat, limiting sugar, and eating more fiber (Condrasky, 2007).

The program provides a practical approach to enhance the development of necessary culinary skills, self-efficacy, nutrition knowledge, and family involvement strategies to create a foundation for children's lifelong health. The study reported here illustrates the relationship among nutrition knowledge, cooking skills, and confidence and motivation for early adolescents to make healthier food choices. The purpose of this article is to share observations and best practices resulting from the Cook Like a Chef evidence-based curriculum with Extension and outreach professionals. It describes the findings and observations in delivery of a 4-week Cook Like a Chef program compared with the 1-week traditional approach. The information will be useful to Extension professionals in planning and presenting cooking programs for early adolescent participants.

## **Purpose and Objective**

In the purpose and objectives section we clarify the rationale, outcome expectations, and specific contact time with two comparable cooking camp models. The main focus of the article is to compare the experiences of early adolescent participants in a 1-week and in a 4-week camp setting. The rationale for the 1-week model is based on the 12-year camp that was conducted at the Pennsylvania State University, as a day camp. As described in the literature (Condrasky, Corr, & Cason, 2007), the 1-week model demonstrates gains in confidence, knowledge, and skills by the participants. It is expected that additional time spent in the kitchen with cooking hands-on activities, as provided in a 4-week model may produce greater gains in knowledge, skills, and confidence and motivation.

However, the resources of the camp facilitator team, food ingredients, and activities to keep the participants occupied all day are considerations in camp organization and planning. The implications regarding planning a cooking camp in terms of time commitment, the resources defined in the project, and the expected outcome measures are key considerations for Extension. The overall purpose of the study was to compare gains in culinary nutrition knowledge and skills as well as confidence and motivation between participants in a 1-week and a 4-week Cook Like a Chef summer camp. The expectation that more confidence and improved changes would result with more programming contact

time provides the rationale for the study of the two comparable samples, one with five interactive culinary nutrition sessions and one with 20 sessions. Subsequent goals were to delineate the resource requirements as well as the additional materials and activities to imbed in the longer camp model. The primary objectives include:

1. To determine changes in knowledge on food safety, food nutrients and sources; as well as food groups and MyPlate in the two camp models.
2. To determine confidence with specific cooking skills for the camp participants.
3. Examine improvement overall confidence of food preparation in camp participants.

## **Methodology and Data Analysis**

The following section identifies the methodology and data analysis used in the study. Information on the Cook Like a Chef program description, set-up specifics for the 1-week and the 4-week camp modes, the facilitator team of chef and nutrition educator, and the evaluation tools used in the study are included.

### **Cook Like a Chef Overview**

The Cook Like a Chef program embodies core competencies that are identified in previous research with Extension programs. The main objectives of Cook Like a Chef are to practice basic cooking fundamentals, techniques, and methods to prepare a variety of different foods and explore ingredients such as legumes and whole grains (Edwards & Hermann 2011). Camp design includes the common core topics of: culinary basics, kitchen protocol, taste workshop, grains preparation, vegetable cookery, fruits, fats & oils, dairy, protein recipes, and application to MyPlate nutrition concepts. Each topic engages the participants with a PowerPoint presentation, a review of the camp manual, and a culinary demonstration. Teams of two participants work interactively to prepare recipes in a kitchen lab station, under the guidance of the facilitator teams.

This experiential method of nutrition and cooking in a hands-on lesson is consistent with those tested in Cooking With Kids, an experiential school-based nutrition education curriculum (Diker, Walters, Cunningham-Sabo, & Baker, 2011) and were incorporated into the program. Children participate in ingredient tasting workshops and learn about a healthy lifestyle through games and fun activities that promote healthy food choices through hands-on interactive nutrition presentations. In the camp setting, the children spend time in discussions and demonstrations, food and kitchen safety practices, cooking with hands-on recipe preparation, and sharing mealtime sampling of foods prepared that session as a group. According to Diehl, Pracht, Forthum, and Simonne (2010), youth are most interested in food safety information that is fun, interactive, and built around cooking demonstrations.

### **Set-Up Specifics of a 1- and 4-Week Camp Model**

During the summer of 2012, 33 adolescents between the ages of 10 and 14 participated in Cook Like a Chef camp in the 1-week half-day program held at The Pennsylvania State University (PSU). That

summer, a comparable camp was designed and delivered in a 4-week full-day model at Southern University and A&M College (SU) in Baton Rouge, LA for a separate group of 23 adolescent boys and girls within the same age range. The program at PSU consisted of five half-day sessions from 9:00 am to 1:00 pm during a 1-week period. The SU 4-week model ran from 8:00 am to 4:00 pm Monday to Friday.

The daily format for the 1-week model included a demonstration and nutrition discussion at the beginning of the session followed by an hour cook time. As time allowed after unit clean up, campers were encouraged to participate in computer activity games (Dance Dance Revolution; Wii) and/or crafts. The campers set their tables and tasted recipes of the day in a shared 11:30 a.m. meal before final clean up and dismissal for the day. There was a quick healthy snack demo at the end of each day. The program used a state-of-the-art kitchen facility at PSU equipped with 12 kitchen units, an overhead camera, and projector system. The 4-week SU camp incorporated the following schedule: 8:00 a.m. meet at the SU Lab School for a shared breakfast meal, a 10-minute walk to the Family and Consumer Sciences foods lab, a nutrition lesson, a cooking demonstration, and then 3 hours of cooking time. The lab contained eight kitchen units and portable video equipment. The camp participants shared lunch together at noon, cleaned up the lab area after lunch, and then walked back to the Lab School where they participated in a variety of physical activities and afternoon healthy snacks. The camp also included field trips to a Whole Foods Grocery Store and the Louisiana Food History Museum in New Orleans, LA.

## **Facilitator Team (Chef Instructor and Camp Counselors)**

In the 1-week model counselors or camp assistants were six undergraduate nutrition majors who had completed an introductory food preparation course prior to camp. They assisted by leading teams of campers in kitchen unit set-up, recipe interpretation, and cooking activities. The nutrition component of the program included formal presentations utilizing PowerPoint and the MyPlate.gov website as well as food models and food ingredients to motivate and enhance the sessions. Nutrition-related topics such as nutrient-specific contribution of each food group, bone health, iron rich food sources, and balancing the plate were incorporated. In the 4-week model at SU nutrition undergraduates and others from related disciplines provided the camp counselor services. The topic areas for both programs were the same. However, the full-day, 20-day camp incorporated an afternoon activity/exercise component and seminars presented by university faculty on goal setting, positive self-esteem, nutrition-related diseases, and food culture. The study was approved by Clemson University, The Pennsylvania State University, and Southern University Offices for Research Protections.

## **Evaluation Tools**

Two pre- and post-questionnaires (Confidence & Motivation and Let's Eat Healthy) and one post-only (Cooking Skills) questionnaire were used to assess the objectives of the study. Participants completed the pre-program assessments at the beginning of the program and again at the end of the program. The Let's Eat Healthy assessment was used to determine changes in nutrition knowledge from pre- to post-intervention. The Cooking Skills post-intervention assessment was used to examine food

preparation skills at the end of the study. The Confidence & Motivation tool, developed and tested for the camp, was used to assess attitude and behavior changes regarding healthy eating from pre- to post-intervention. These three evaluation tools are available on the CU CHEFS™ <http://www.clemson.edu/cafls/cuchefs/> site.

## ***Nutrition Knowledge***

The Let's Eat Healthy survey is a modified version of a validated evaluation tool, Eating is Fun: Food and Me, developed by Michigan State University Extension. This tool was used to assess the knowledge and behavioral change of participants (Dixon, 2013). These questions were answered at the beginning of camp and at the end of camp. We grouped the eight questions (items) into three categories to focus on our objectives: food safety, food nutrients and sources, and food groups and MyPlate. Multiple-choice Food Safety items included: we should wash fruits and vegetables before we eat them and why should we not eat food that has been sitting out for more than 2 hours. Food Nutrients and Sources items included: Eggs and nuts are a good source of what? And which food is the best source of whole grain? Food Groups and MyPlate items included: What information can we learn from MyPlate? How many servings per day should we have from the milk group? And which of these is the healthiest snack?

## ***Cooking Skills***

The modified version Cooking Up Fun! series validated evaluation tool developed by Cornell Cooperative Extension was used to assess the participants' food preparation skills (Cooking Skills) upon the completion of the program (Dixon, 2013). This Cooking Skills section, included cooking-related items for participants to rate how well they perform each skill by selecting one of the following comments: "I tried the skill for the first time," "I improved," "I practiced at home," "I want to practice more," "I can do this well," and "I taught someone else." For the research reported here we selected four cooking skills to concentrate on including (sauté, steam, stir-fry, and bake). These skills are included in the recipes of camp and were selected to enhance general understanding of the confidence gains in children who participate in the camp programs at the 1-week and 4-week sessions to further enable facilitators of cooking programs to provide for the needs of children served.

## ***Confidence and Motivation***

A pretest/posttest evaluation tool was designed and tested to measure the attitudes and behaviors related to preparing and consuming fruits and vegetables as well as perceived motivation for eating healthy. The tool contained 13 items, and for this research we used five items to measure the factor "Confidence to prepare healthy meals and snacks" (Cronbach's alpha >0.7). The participants' confidence levels were determined by a range of 1 ("Very Unsure I Can") to 6 ("Very Sure I Can"). Participants were asked to show their "certainty" with five statements: I can make fruit snacks for myself; I can make vegetable snacks or foods for myself; I can help cook healthy dinners; I can try new recipes with vegetables, and I can use herbs and spices in cooking. This survey instrument is further described by Dixon (2013).

## Statistical Analysis

The change in the "confidence to prepare healthy meals and snacks" from pre to post for the 1-week camp was compared with the change for the 4-week camp. The comparison was conducted using an Analysis of Covariance where Age and Gender were controlled for in the analysis. The pre- to post-change in the number of items correct on the Let's Eat Healthy! Survey for the 1-week camp compared to the change for the 4-week camp was analyzed using Wilcoxon's rank sum test. Descriptive statistics were computed for the Cooking Skills survey. All analyses were conducted in SAS v. 9.3. A significance level of 0.05 was used for all tests of significance.

## Results

**Table 1.**

Percentage and Frequencies of Cook Like a Chef  
Participants

<b>Demographic</b>	<b>1-week % (n)</b>	<b>4-week % (n)</b>
<b>Age</b>		
10	6 (2)	14 (3)
11	42 (14)	48 (10)
12	36 (12)	10 (2)
13	12 (4)	10 (2)
14	3 (1)	19 (4)
<b>Grade</b>		
4	3 (1)	
5	3 (1)	24 (5)
6	39 (13)	29 (6)
7	33 (11)	29 (6)
8	18 (6)	14 (3)
9	3 (1)	5 (1)
<b>Gender</b>		
F	70 (23)	52 (11)
M	30 (10)	48 (10)

Table 1 describes the CAMP participants for the 1- and 4-week camps. For the 1-week camp, 48% were ages 10 and 11; 48% were ages 12 and 13, and the remaining were 14 year olds. In the 4-week camp, 62% were 10 and 11 years; 20% were 12 and 13 year olds; and 19% were age 14. One-week

camp had 70% females, while the 4-week camp had 52% female participants.

**Table 2.**

Percentage and Frequencies of Cook Like a Chef Participants' Cooking Skills in the Post-Survey. Values in the Table Are % (n)

Cooking Skills	Camp	I tried this for the first time.	I improved.	I practiced at home.	I want to practice more.	I can do this well.	I taught someone else.
Sautéing	1-week	18 (6)	15 (5)	3 (1)	21 (7)	42 (14)	0 (0)
	4-week	5 (1)	5 (1)	14 (3)	5 (1)	52 (11)	19 (4)
How to steam	1-week	34 (11)	3 (1)	6 (2)	16 (5)	41 (13)	0 (0)
	4-week	9 (2)	0 (0)	14 (4)	9 (2)	61 (14)	4 (1)
How to stir-fry	1-week	33 (11)	9 (3)	0 (0)	24 (8)	33 (11)	0 (0)
	4-week	9 (2)	4 (1)	4 (1)	9 (2)	52 (12)	22 (5)
How to bake	1-week	0 (0)	3 (1)	6 (2)	6 (2)	82 (27)	8 (2)
	4-week	0 (0)	8 (2)	8 (2)	8 (2)	67 (16)	8 (2)

Table 2 indicates representation of 1-week campers who admit to trying for the first time sauté (18%), steam (34%), and stir-fry (33%), and these campers note improvement in sauté (15%) and stir fry (9%). Four-week campers practiced more at home with sauté and steam (14%, n=4) and baking (8%, n=2). One-week campers were interested in wanting to practice more for sauté (21%, n=7), steam (16%, n=5), and stir fry (24%, n=8). Over 50% of the campers in both the 1- and the 4-week groups indicate they can sauté and bake well, with a majority of the 4-week group also indicating they can steam well. The 4-week group indicated they taught someone else to sauté (19%, n=4) and stir fry (22%, n=5).

**Table 3.**

Mean (SD) Pre and Post Scores for Confidence to Prepare Healthy Meals and Snacks Factor and Let's Eat Healthy! Survey

		Pre	Post
Confidence to prepare healthy meals and snacks	1-week	25.80 (4.09)	28.73 (1.69)
	4-week	23.70 (4.74)	25.67 (5.18)
Food safety	1-week	1.63 (0.55)	1.61 (0.56)
	4-week	1.38	1.76 (0.54)

	week	(0.59)	
Food nutrients and sources	1-week	1.03 (0.30)	1.00 (0.00)
	4-week	1.67 (0.58)	1.76 (0.54)
Food groups and MyPlate	1-week	2.70 (0.47)	2.61 (0.50)
	4-week	2.10 (0.70)	2.52 (0.75)

There was not a significant difference in the "confidence to prepare healthy meals and snacks" (Table 3) for the 1-week camp and the 4-week camp controlling for age and gender ( $F(1,38)=0.06$ ,  $p=0.811$ ). The average change in the confidence to prepare healthy meals and snacks for the 1-week camp was 2.07 (SE=1.11), while the average pre-to-post-change for the 4-week camp was 1.74 (SE=0.93).

There was not a significant difference in the change in the Food Safety scores between the 1- and the 4-week camps ( $p=0.30$ ). There was also not a significant difference in the change in Food Nutrients and Sources scores for the 1- and the 4-week camps ( $p=0.22$ ). A significant difference did exist in the Food Groups and MyPlate category between the 1- and 4-week camps ( $p=0.02$ ). The 4-week camp had a larger change in the fraction of items correct than the 1-week camp.

## Discussion

The rationale for comparing 1- and 4-week camp models given a common core of topics was initiated as a follow up to demonstrated gains in confidence, knowledge, and skills in a previously tested 1-week model (Condrasky, Corr, & Cason, 2007) It was expected that with enhanced time spent in the kitchen with cooking hands-on activities as provided in a 4-week model, the gains in knowledge, skills, and confidence and motivation would be greater.

Children in camp at the 1- and 4-week models demonstrated gains in nutrition knowledge, cooking skills, and motivation and confidence to prepare healthy meals and snacks. The main take-away from the results is essentially that the quality, diversity of program delivery methods (interactivity), and expertise of program leaders are key to positive outcomes rather than the length of time youth engage in camp programs.

## Improving Cooking Skills and Knowledge

As noted from the research reported here, the 1-week campers were interested in wanting more practice in sauté, steam, and stir fry techniques. The majority the campers in both groups indicated that they could sauté and bake items well, with a majority of the 4-week group also indicating they could steam items well. The 4-week group indicated that they taught someone else to sauté and stir fry. These differences between self-reported competence may be affected by the additional time in



recipe preparation built into the model with 20 cooking sessions. Further research needs to follow in order to substantiate this notion. Additional time in the foods lab, however, appears to benefit some cook techniques. As described by Franck, Vineyard, Olson, and Peterson (2012), experiential cooking classes provide a strategy for the educator to increase program success by focusing on the need for adequate time on task for the participants as well as appropriate facilities and equipment for cooking and eating the food prepared together. A significant difference did exist in the Food Groups and MyPlate category items noted in the study between the 1- and 4-week camp participants. The longer camp demonstrated a larger change in the fraction of items answered correctly.

This is important given the reality that many early adolescents do not have cooking and general nutrition experiences in the home. Many of today's youth are two generations away from households where healthy foods were prepared at home from fresh ingredients (Neumark-Sztainer, 2012). Their parents want them to learn but don't have the skills themselves to teach them (Hammons & Fiese, 2011).

## **Enhancing Extension's Reach**

Cooking and nutrition experience is a hands-on, life-skill building exercise that is within the domain of Extension education. Cook Like a Chef and similar programs can serve as an intervention for the youth and their whole family. The Cook Like a Chef program is not only a culinary nutrition lifestyle intervention for adolescents; it is a way for the children to become an active part of their own food, food safety, and lifestyle choices. (Dixon, 2014).

The resources of the camp, including the facilitator team, recipes, and activities to keep the participants engaged, are considerations in camp organization and planning. This article has identified components for a five- as well as a 20-session camp. Although gains were similar for both of the camp contact lengths, the time and resource demands are important considerations in planning a camp. The resources defined in this article and the expected outcome measures are key design elements for Extension. Necessary preparations and logistics of delivering a cooking camp program may seem daunting and time consuming, yet they don't have to be so complex if the tasks are divided among willing partners (chef, nutrition educator, camp counselors, and sponsoring agency) invested in the outcome.

Considerations on the program set-up, support team, and facilities are key. Although the 4-week model of Cook Like a Chef demonstrated significant gains, the 1-week model success matrix has been documented. It is the role of the facilitator and community together to streamline the preferred cooking program for the target audience depending on the delivery model chosen.

With great support systems in place, like the use of local nutrition educators and professional chefs, the camp design can be easily aligned. Cooking programs can be supported by recruiting camp counselors from local culinary and nutrition programs. The opportunity for Extension to use young people to assist them in teaching has been reinforced by Lee and Murdock (2001) and bears further testing.

## **Effective Practice Opportunities**

Working in the kitchen and providing a culinary camp is a challenge; yet with the right mindset and support this mission can be accomplished with ease and finesse. Partnering with an organization, such as the land-grant university provides a depth of background on how to adapt or write curriculum as well as support in applying for grants in support of the program, for example, Supplemental Nutrition Assistance Program scholarships. The curriculum and educational points are necessary to be defined in order to measure the strengths and educational benefits for the intervention group. Using the power of a known and reputable culinary professional, such as a popular local chef or celebrity chef with ties to the community, can add to the promotion of the program and its core strength of developing culinary skills. A recognized culinary professional will lend their celebrity (and confidence) to the program (Slusser, 2011), allowing for wider recognition by parents, guardians, and children interested in the program.

The development phase for a cooking program requires careful planning, but greater reach can be accomplished with these local and community support team members. As evidenced in the camp models described, interactive culinary nutrition programs increase participant confidence in choosing and preparing healthy foods. The Cook Like a Chef camp curriculum represents a commitment to healthy food that tastes great. This shared culinary and nutrition experiential learning plan has potential for various targeted ages groups to be further tested.

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