

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nutrition & Health Sciences Dissertations &
Theses

Nutrition and Health Sciences, Department of

Summer 7-2013

A Pilot Mixed Methods Evaluation Study of the Effectiveness of an After-School Cooking Club Curriculum for Middle School Students

Elisha M. Hall

University of Nebraska-Lincoln, elisha@huskers.unl.edu

Follow this and additional works at: <https://digitalcommons.unl.edu/nutritiondiss>



Part of the [Dietetics and Clinical Nutrition Commons](#)

Hall, Elisha M., "A Pilot Mixed Methods Evaluation Study of the Effectiveness of an After-School Cooking Club Curriculum for Middle School Students" (2013). *Nutrition & Health Sciences Dissertations & Theses*. 44.

<https://digitalcommons.unl.edu/nutritiondiss/44>

This Article is brought to you for free and open access by the Nutrition and Health Sciences, Department of at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nutrition & Health Sciences Dissertations & Theses by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

A Pilot Mixed Methods Evaluation Study of the Effectiveness of an After-School Cooking Club Curriculum for Middle School Students

By

Elisha Hall

A THESIS

Presented to the Faculty of

The Graduate College at the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Master of Science

Major: Nutrition and Health Sciences

Under the Supervision of Professor Candace Kohnke

Lincoln, NE

July, 2013

A Pilot Mixed Methods Evaluation Study of the Effectiveness of an After-School Cooking Club Curriculum for Middle School Students

Elisha M. Hall, M.S.

University of Nebraska, 2013

Advisor: Candace Kohnke

Introduction: Obesity has exponentially increased each decade, with approximately one third of the adult American population obese and another one third overweight. More startling is that these trends are rising in children as well. With economic, health, social, mental, and emotional consequences, childhood obesity has quickly risen as a significant issue to tackle. Increases in fast food consumption have been linked with overweight status, and home cooked meals are slowly becoming part of the past. The adolescent time period, in which children are slowly gaining more autonomy and conducting their activities independent from their parents, is an optimal time to stage a cooking skill intervention. The few studies that have thus far been conducted involving cooking interventions show promise and room for further investigation using a mixed methods approach.

Purpose: The purpose of this study was to examine the effectiveness of a cooking intervention in 6th-8th grade students in an after-school setting in terms of change in knowledge, attitudes, behaviors, and parental interaction. Secondly, it sought to determine which teaching method was most effective in engaging students.

Methods: A convergent model under the triangulation mixed methods model design was used. Data collected included pre- and post-youth surveys (quantitative), focus groups

(qualitative), and observations (quantitative and qualitative). A cooking intervention comprised of eight sessions spread out over eight weeks and lasting 45 minutes per week was conducted with 6th-8th grade middle school students (n=10) in their participating middle school's home economics classroom.

Results: Data indicated that results of the intervention included: 1. Increased cooking skill knowledge, 2. No behavior change, 3. Positive attitude toward cooking, 4. Little to no parental interaction in terms of cooking, 5. Interactive teaching method was most effective 6. Increased group cooperation.

Conclusion and Implications: This study indicated that through an after-school cooking club, it is possible to increase the knowledge of 6th-8th grade students, especially with the use of more interactive teaching methods. More research is needed to determine how to create behavior change and increase student/parent interaction involving cooking.

Author's Acknowledgements

This research project would not have been possible without several faculty and nutrition professionals. First I would like to thank my advisor, Dr. Candace Kohnke for her guidance on this research every step of the way. I appreciate all the support and encouragement that you have given me. I would also like to thank Dr. Shinya Takahashi and Dr. Tim Carr for serving on my committee and providing their recommendations, advice, and guidance. I would like to thank Dr. Wanda Koszewski as well for investing her time and effort in me and originating my project.

I would also like to thank Melissa Wallinga, Jean Ann Fischer, Mindy Anderson-Knott, and Deepa Srivastava for lending their assistance and expertise. I would also like to thank Amy Texley for assisting with my data analysis.

Thank you to my family, especially my parents, Mark and Cathy Hall, and my sister, Adrienne Wilson, for their love and support that have helped me get to this point in my academic career. I would like to also thank Katie Bolte and Ellen Thomsen for their support and encouragement during the last two years; your friendship is greatly valued and appreciated. I would also like to thank Andy Barron for believing in me, encouraging me to reach my goals, and keeping me sane through my stress! Your positivity and support have helped me more than you know.

Funding Source

Funding for this research project was provided by: National Research Initiative Grant no. 2011-67002-30202 from the Food and Agriculture Division of Nutrition.

Table of Contents

List of Figures and Tables	viii
List of Appendices	ix
Chapter I. Introduction	1
Significance of Research	1
Purpose	3
Hypothesis	4
Research Questions	4
Objectives	7
Chapter II. Literature Review	8
Current Obesity Statistics	8
Consequences of Obesity	9
Environment	12
Adolescent Dietary Intake	14
Cooking Skills	15
Literature Gaps	19
Chapter III. Methodology	20
Research Design	20
Subjects	21
Curriculum	22
Data Collection Tools	23
Data Collection Procedure	24

Data Analysis	26
Chapter IV. Results	27
Demographic Results	27
Quantitative Results: Pre- and Post- Surveys	27
Quantitative Results: Observation Matrix	34
Qualitative Results: Focus Group	38
Qualitative Results: Freehand Observations	42
Mixed Method Results	48
Chapter V. Discussion and Conclusion	52
Discussion	52
Barriers and Recommendations	55
Conclusion	60
Strengths & Limitations	60
Implications for Further Research	61
References	63
Appendices	68

List of Figures and Tables

Figure 1: Triangulation Design: Convergence Model

Table 1: Demographic Characteristics of Subjects

Table 2: Quantitative Results: Pre- and Post- Youth Survey, Knowledge

Table 3: Quantitative Results: Pre- and Post- Youth Survey, Attitude

Table 4: Quantitative Results: Pre- and Post- Youth Survey, Behavior

Table 5: Quantitative Results: Pre- and Post- Youth Survey, Parental Interaction

Table 6: Quantitative Results: Observational Data, Instructors

Table 7: Quantitative Results: Observational Data, Youth

Table 8: Qualitative Themes and Evidence From Participant Quotations

Table 9: Qualitative Themes and Evidence from Freehand Observations

Table 10: Mixed Method Results: Qualitative and Quantitative Results Merged

List of Appendices

Appendix A: Lincoln Public Schools Letter of Approval

Appendix B: Institutional Review Board Original Approval

Appendix C: Institutional Review Board Approval: Pre- and Post-Youth Surveys

Appendix D: Institutional Review Board Approval for Modification of Consent Forms

Appendix E: Youth Assent Form

Appendix F: Instructions for Parent Consent and Club Information

Appendix G: Parent Consent Form

Appendix H: Matrix Observation Sheet Created by Deepa Srivastava

Appendix I: Pre-Assessment Youth Survey

Appendix J: Post-Assessment Youth Survey

Appendix K: Cooking Club Curriculum

Appendix L: Focus Group Transcript

Appendix M: Freehand Observations

Chapter I: Introduction

Significance of Research

Overweight and obesity has grown exponentially throughout the years. Currently approximately one third of the adult population in the United States is obese¹ and obesity in children and adolescents has multiplied almost three times since 1980¹. Overweight and obesity can lead to a myriad of health complications and chronic diseases, meaning rising healthcare costs and higher morbidity and mortality, not to mention the mental and emotional stigmatism that comes with extra weight.

One possible solution to combating this growing epidemic is through teaching children cooking skills. The Cochrane Review compiles a thorough report on interventions for childhood obesity, including a total of 64 randomized controlled trials in its most recent report. This report highlights dietary, behavioral, and activity-based interventions among children under 12 years old. For those 12 years and older, it highlights dietary, behavioral, activity-based, drug, and lifestyle interventions. From these interventions, though not one in particular can be deemed a gold standard for interventions, it was determined that combined behavioral lifestyle interventions were most effective for children². Of these interventions, none dealt solely with cooking interventions, a behavioral and lifestyle intervention that has potential to provide children with skills that they can use to create healthy, homemade meals.

Such an intervention would be optimal in the adolescent period of life. Though adolescence has several definitions throughout the literature, for the purposes of this paper it will be defined as the ages of 11-15 years old. Adolescence is an optimal

opportunity for an intervention due to the accelerated development of autonomy that occurs during this period. With an increase in both physical and cognitive changes, adolescents are discovering their own independence and decision-making³. Parents are beginning to leave their children at home without a caregiver at this time as well. By teaching adolescents cooking skills, they can learn behaviors that they can use as part of a healthy lifestyle at home.

One program that is already established, but lacking a cooking component is a South Dakota State University developed program: KidQuest. This program, designed for early adolescents (5th and 6th grade students) integrates both a nutrition and physical activity component into its curriculum. The six-lesson course is intended to be taught over the course of 6 months with 20-30 minutes of hands-on lessons and 10-minutes of physical activity sessions. The following are included as the six nutrition lessons: 1. Introduction, Label Lingo and Think Your Drink, 2. Eating Out, Portion Size, and Snacks, 3. Fruits and Veggies, 4. Whole Grains and Breakfast, 5. Dairy Intake, and 6. Media Messages. In addition, a family component is included by sending out parent newsletters and “family fun packs” which contain several items such as recipes, promotional items, and a family challenge to get everyone involved⁴.

The KidQuest pilot study was conducted and evaluated over the 2005-2006 period, resulting in a significant improvement in breakfast consumption, dairy consumption, food label knowledge, and frequency of looking at food labels. In addition, it was found that both the challenges in the family fun packs and the parent newsletters were effective communication strategies⁴.

With the success of KidQuest in South Dakota, the University of Nebraska-Lincoln was provided with the opportunity to use the same KidQuest curriculum in middle school students (6th-8th grade students). In addition, a cooking club component was added as an optional 8-week course for students to learn and practice cooking skills and for researchers to evaluate the effectiveness of this additional component to an already successful program. This study investigates this added cooking component.

Purpose of Study:

This mixed method study was designed to address how effective a Cooking Club intervention is for 6th-8th grade middle school students, and if effective, what teaching methods are most effective. A convergent model under the triangulation mixed methods design was used, in which both quantitative and qualitative data sets are collected concurrently, analyzed separately, then merged. In this study, quantitative pre- and post-youth surveys and an observation matrix were used to test whether the Cooking Club intervention would positively influence knowledge, attitudes, behavior, and parental interaction for 6th-8th grade students at a Lincoln Public Middle School. It was also used to determine which type of teaching method is most effective. Concurrent with this data collection, qualitative focus groups and freehand observations were used to explore how participants perceive the effect Cooking Club on themselves. The reason for collecting both types of data and merging the results was to highlight the strengths of each form of research method in order to corroborate and validate results.

Hypothesis:

1. The Cooking Club intervention for middle school students in the after school setting would increase cooking skill knowledge, create a more positive attitude toward cooking, and increase frequency of cooking behaviors.

2. The Cooking Club intervention would increase student participation in family meals at home and increase communication between students and parents in regards to cooking.

3. More interactive teaching methods (i.e. instructors asking students more questions, including students in lessons, talking with students throughout cooking activities) will be more effective at keeping students engaged.

Quantitative Research Questions:

Central Questions

1. What is the change in attitude, behavior, knowledge, and parental interaction between pre- and post-intervention?
2. What is the most effective teaching method for Cooking Club in terms of association with more engaged behaviors?

Sub-Questions

1. What is the effect of Cooking Club on participants' knowledge of kitchen utensils, recipes, and basic cooking skills?
2. What is the effect of Cooking Club on participants' attitude toward the importance, enjoyment, and pride of cooking?

3. What is the effect of Cooking Club on participants' ability to perform cooking behaviors?
4. What is the effect of Cooking Club on participants' interactions with their parents in regards to cooking, such as grocery shopping and cooking together?
5. When given the opportunity, do participants choose to be actively involved in cooking activities?
6. Are there times/situations in which participants are more actively involved or actively listening?
7. Do participants show a positive attitude toward cooking lessons and activities?

Qualitative Research Questions:

Central Questions

1. How do 6th-8th grade students participating in Cooking Club describe their attitude, behavior, knowledge, and parental interaction post-intervention?
2. Which teaching method for Cooking Club creates the most optimal learning experience for 6th-8th grade participants?

Sub-Questions

1. How do participants describe their knowledge of cooking post-intervention in comparison to pre-intervention?
2. How do participants describe their attitude toward cooking post-intervention in comparison to pre-intervention?
3. How do participants describe their cooking behaviors post-intervention in comparison to pre-intervention?

4. How do participants describe their interaction and communication with their parents and/or family post-intervention in comparison to pre-intervention?
5. What situations during the intervention elicit more engagement from participants toward a lesson?
6. What situations during the intervention elicit more engagement from participants toward a cooking activity?
7. What situations during the intervention elicit a more positive attitude from participants?

Mixed Methods Research Question

Central Questions

1. Is Cooking Club in the after-school setting an effective intervention for improving middle school students' knowledge, attitude, behaviors, and interaction with parents?
2. What is the most effective teaching method for an after-school cooking intervention for middle school students?

Sub-Questions

1. To what extent do qualitative themes support quantitative survey and observation matrix results?
2. What are the similarities and differences between quantitative and qualitative data?
3. To what extent do quantitative and qualitative data corroborate?

Objectives:

1. To assess and compare knowledge, attitude, and behavior in regards to cooking in middle school students through a pre- and post- survey.
2. To identify areas that are not resulting in improved knowledge, attitude, and behaviors, in order to pinpoint areas for improvement.
3. To compare student involvement with meals at home pre and post intervention.
4. To explore students' communication with parents in regards to Cooking Club.
5. To determine which teaching method is most effective at engaging students.

Chapter II: Literature Review

Current Obesity Statistics

According to the Centers for Disease Control and Prevention (CDC)¹, as of 2009, 35.7% of adults in the United States were obese (defined as a body mass index (BMI) greater than or equal to 30), with men being approximately equal to women. In addition, 16.9% of children and adolescents, ages 2-19, in the United States were obese (defined as at or above the 95th percentile on the CDC Growth Charts), with boys having higher rates than girls (18.6% versus 15% respectively).

Most startling is that if obesity trends continue, obesity could affect almost half of the United States population in the next 20 years, obesity-related chronic disease could increase by 10 times by 2020, and health care costs related to obesity could increase by at least 10% or more⁶. These worrisome projections prompt a need for interventions in order to curb this trend.

Nebraska also mirrors the nation-wide trend of increasing obesity, with 26.9% obese adults 64.1% combined overweight (BMI of 25 to 29.9) and obese adults as of 2010⁵. In addition, data from the Youth Risk Behavior Survey (YRBS) indicates that as of 2011, 11.6% of high school students were obese and 13.6% were overweight⁶. The 2007 National Survey of Children's Health found that the combined percentage of overweight and obese children ages 10-17 was 31.5%, placing Nebraska 21st out of all states for overweight and obesity rates⁶. But obesity begins even younger than adolescence; the 2010 Pediatric Nutrition Surveillance Survey (PedNSS) found that 13.8% of Nebraska's low-income children ages 2-5 were obese⁶.

More specifically is the prevalence of overweight and obesity in Lincoln Public Schools (LPS) in Lincoln, Nebraska. According to the most recent overweight and obesity summary for LPS, for the 2012-2013 school year, the obesity rate of kindergarten through 8th grade students was 16.3%, down 0.5% from the previous school year. Though this decrease is promising, there is still much room for improvement, especially in middle schools, where the rates of overweight and obesity were even higher for the 2012-2013 school year. Sixth grade students had an overweight and obesity rate at 16.0% and 18.5% respectively, seventh grade students at 17.3% and 19.8% respectively and eighth grade students at 16.1% and 19.5% respectively⁷. New citation

In addition, in LPS the trend of increased obesity prevalence is found in schools with more students qualifying for free/reduced priced meals, showing a correlation between lower incomes and higher obesity rates⁸, as is also the trend nationally. Elementary schools in Lincoln have a slight advantage over middle schools, in that policy states there must be mandatory recess and physical activity breaks in elementary schools, but this is not so for middle schools⁸. Nor, in middle schools, is family and consumer science a required class, but rather an elective class.

Consequences of Obesity

Obesity is not just an issue of weight and appearance, but also comes with health consequences, including physical, mental, and emotional health consequences. Though childhood obesity is a relatively newer area of study with the question of how powerful of an effect excess weight has on physical health, many studies have found that childhood obesity does track into adult obesity, which has proven health consequences⁹.

Some health complications that can occur in overweight and obese children that are more minor include: heat intolerance, heat rash, breathlessness on little exertion, fatigue, musculoskeletal discomfort, and cutaneous striae⁹. Though these minor health complications are more annoyances to a child than direct dangerous risk factors, they can indirectly contribute to more weight gain, and thus more major health complications. For instance, breathlessness on little exertion can discourage an overweight or obese child from participating in physical activity, thus promoting more weight gain.

More worrisome are the potential major health complications⁹ that can result. These include: hypertension, cardiac muscle abnormalities (greater mass of the left ventricle, ventricular septal thickness, posterior wall thickness), abnormal blood vessel structure and function (greater intimal-medial thickness and a decreased vascular compliance), abnormal heart rate, sleep apnea, Pickwickian syndrome, asthma¹⁰, Type 2 Diabetes, delayed or early onset of puberty, polycystic ovarian syndrome, orthopedic issues, hepatic steatosis, cholelithiasis, and benign intracranial hypertension⁹. Some of these complications increase the risk for heart disease, the number one cause of death for adults in the United States¹¹. Although not all of these health risks have been proven with certainty in children, as they show up in studies with some inconsistency, the possibility of detrimental health effects exists and prevention and intervention efforts should be taken.

Whether or not developing these risk factors so early in life will increase the severity of a normally adult-onset disease is not fully understood. However, multiple studies have found that child and adolescent obesity are associated with earlier mortality

and adult morbidity, especially cardiometabolic morbidity¹². It is unclear though, whether childhood obesity increases the risk or severity of other adult onset obesity-related diseases, such as cancer (specifically breast, endometrial, or prostate cancers)¹³. With at least some of the evidence pointing toward the increased chance of earlier mortality and longer morbidity, preventing and lessening childhood obesity is an issue of concern.

The consequences of childhood obesity stretch far beyond just physical health though. Social interactions become more aggressive, and instances of teasing and bullying become more common in overweight and obese individuals than in their average weight peers¹⁴. These negative social interactions don't just end in school though; some studies have also found that increased weight status in adults is associated with a decreased probability of employment and lower household income¹⁵. These findings emphasize the importance of preventing the development of obesity early on to reduce the social stigmatism and discrimination that individuals can face both as children and adults.

Increasing weight in children and adolescents has also been associated with lower body satisfaction, self-concept, and self-esteem¹⁵. In addition, overweight and obese children are likely to have low confidence and a poor body image to a higher extent than if overweight and obesity developed in adulthood. This is due to the fact that childhood is a critical time period in life of the formation of body image and self-esteem. This poor self-image tends to continue into adulthood, especially with females¹⁶.

The consequences of obesity are not just a burden on the individual level, but also contribute to health care costs for the entire country. Though the exact health care cost of obesity is difficult to calculate, experts have made estimates of the cost. It is estimated that adult obesity costs \$147-\$210 billion in health care costs per year. Most of this spending is attributed to the cost of obesity-related diseases. In addition, Medicare and Medicaid pay \$61.8 billion of this amount. Health care costs from obesity are not only to be viewed as a future issue for children with obesity, as childhood obesity itself costs \$14.1 billion per year⁶.

This does not even take into account the billions of dollars that obesity costs annually in terms of decreased productivity in the workplace and increased absenteeism. Absenteeism due to obesity costs \$4.3 billion annually. In addition, obese workers tend to have higher workers' compensation claims⁶. If obesity continues on its increasing trend, and currently overweight and obese children grow into obese adults, this will increase the economic burden.

Environment Contributing to Obesity

Many environmental issues contribute to childhood obesity, including the built environment, home environment, and school environment. Policy makers, parents, school employees, and more are responsible for creating healthy environments that promote nutritionally sound diets and encourage frequent physical activity.

In the built environment, there are many aspects that contribute to the increase in obesity. For instance, studies have shown that neighborhoods of low socioeconomic status with less access to recreational facilities and less access to full grocery stores with

healthy food options have an increased risk of obesity. These neighborhoods also often have a higher number of fast-food restaurants and convenience stores that are known for their high-calorie, high-fat food options¹⁶. In addition, many communities are now designed with a higher amount of urban sprawl, meaning that homes are far away from amenities. Communities such as these are characterized by high-speed roadways that must be traveled in order to reach amenities, meaning that walking or biking is generally unsafe, and car travel must be used to reach a destination. This decreases the amount of physical activity, which can result in weight gain. Not to mention that there is also the problem, in some areas, with unsafe sidewalks and intersections, as well as crime, decreasing the amount of people that go outside their homes¹⁷.

The built environment doesn't just affect childhood obesity through its actual attributes, but also by parents' perceptions of its attributes. A study by Cecil-Karb and Grogan-Kaylor found that when parents perceived their neighborhoods as unsafe for their children, those children had a significantly higher body mass index (BMI) than children whose parents did not perceive their neighborhoods as dangerous. It was also found that these same children with higher BMIs spent a significantly longer time inside watching TV, which could explain the BMI itself, but could also be explained by parents' perceptions¹⁸.

Since children and adolescents spend a great deal of time with their families, the home environment is also an important component in childhood obesity. Children learn behaviors through observing and imitating their parents from a young age. Eating style, eating behavior, and even food offered from parents can influence a child's own eating

behavior, emphasizing the importance of parents' behaviors and attitudes toward food on their children¹⁹. Without positive role models, this adds one more factor contributing to the development of poor eating habits.

Another environment that affects children and their formation of healthy or unhealthy habits is the school environment. With children spending approximately eight hours, or one third of their entire day at school, there is great potential for either the prevention or development of childhood obesity. With the implementation of new school meal standards from the Healthy, Hunger Free Kids Act, that better meet the goals of the Dietary Guidelines in 2012, there is promise at making the school environment healthier²⁰. On the other hand, there is currently no national standard requirement for physical education. Although the Shape of the Nation Report 2012, conducted by the American Heart Association and the National Association for Sport and Physical Education, indicates that 74.5% of states mandate physical education, a majority of those schools do not have established requirements on the amount of physical education or allow students waivers²¹. This means that students may not actually receive much physical education or may opt out.

Adolescent Dietary Intake

With the barriers to healthy eating currently present in society, not all adolescents are meeting the Dietary Guidelines for Americans, 2010, the most recent dietary recommendations created by scientific experts from the US Departments of Agriculture (USDA) and Health and Human Services (HHS), and intended for Americans 2 years and older²². Currently, most youth in the United States do not meet the recommendations for

fruits, vegetables, or whole grains. In addition, they exceed the sodium recommendation, drink more soda than milk per day²³, and consume 40% of daily calories from added sugars and solid fats²³. In fact data from the National Health and Nutrition Examination Survey (NHANES) showed that the six foods that most commonly made up these empty calories in a child's diet were soda, fruit drinks, dairy desserts, grain desserts, pizza, and whole milk²⁴.

Also, according to NHANES data, snacking among adolescents increased from 61% in 1977-1978 to 83% in 2005-2006. Not only did snacking itself increase, but also the amount of snacks per day increased from 1.0 to 1.7. On average, these snacks accounted for 526 calories, which is approximately 25% of an average youth's total needs for the day. Although these snacks tended to provide higher proportions of Vitamins C and E, they provided lower proportions of most other nutrients. Adolescents did not make up for the additional calories added by snacking during the day by eating smaller meals. In fact, frequent snacking was associated with an increased daily caloric intake, likely due to the high sugar content of these snacks. Increased snacking though was not associated with BMI²⁵.

Cooking Skills

With clear room for improvement to meet Dietary Guidelines, examining cooking skills is one area to investigate. Though childhood obesity is a multifaceted issue with many causes, there currently is very little literature on cooking skills in adolescents and its effect on obesity. Moreover, there is even less literature on the effect of a cooking intervention in any population. Since the adolescent period of a child's life is a time of

increased independence, decision-making, and cognitive development²⁶, it is an optimal time to learn new or improve current cooking skills.

Cooking at home has been decreasing while eating at fast food restaurants has been increasing since the 1990s, contributing to weight gain²⁷. With the advent of fast-food restaurants, pre-packaged meals, and the simple idea of speed and convenience, society has increased its intake of fast food. Also, as discussed earlier, the built environment contributes to this issue with a large density of fast food restaurants available to families. Generally, intake of fast-food results in higher total energy, higher carbohydrate, higher added sugars, higher sugar-sweetened beverage, lower fiber, lower milk, and lower fruit and vegetable intake²⁸.

There are varying reasons for a decrease of meals cooked at home, but whether cooking skills (or lack thereof) contribute to this has not been thoroughly studied²⁹ and has the potential to contribute to eating fewer meals at home. For instance, a common reason for consuming fast food over a meal cooked from scratch at home is that it takes a long amount of time to cook at home, but this is a misconception, as not all healthy meals cooked at home take a large amount of time to prepare³⁰. Currently there is more speculation than actual literature to show a decline in cooking skills among Americans, but the previous example lends to the possibility that there is a lack of knowledge on cooking skills and an area in need of improvement.

Of the few studies examining cooking skills in adolescents, researchers using Project EAT (Eating Among Teens) self-reported survey data from adolescents found that preparing food was associated with more healthful food choices, indicating that it is

important that adolescents learn to prepare food in order to eat more nutritiously.

Conversely, it was also found that overweight and obese adolescents prepared food more often than their underweight and average weight counterparts, leaving the possibility that other factors such as socioeconomic status and lack of knowledge may be associated with more calorie-dense food choices for meal preparation in this population³¹.

Further, a United Kingdom study used an intervention approach to determine the effect of an after-school Food Club on a sample (n=98) of 11 and 12 year old children. This intervention consisted of a food technology teacher leading a two-hour Food Club for 20 weeks in which students had the opportunity to experience new foods, practice cooking skills, and learn about nutrition. Only 44% of these participants attended 15 or more sessions though, showing that long-term interventions may need more incentives to increase compliance. Through qualitative focus groups, participants reported that they had developed cooking skills and knowledge through this food club, had become more aware of the importance of a healthy diet, started eating healthier in small ways, and interacted with their family in regards to this food club³². Though this study provides promising results for an after-school food club for the middle school age-range, there is the lack of quantitative data, and a mixed methods approach could have helped to validate the qualitative data that was collected.

Another study looking at data from the second wave of Project EAT, when participants included were young adults of 18-23 years, sought to determine if food preparation skills were associated with improved nutrition. It was found that the young adults who reported preparing food more frequently rather than eating fast food were

more likely to have more nutritious meals that met the Healthy People 2010 objectives for several important food groups, including whole grains, fruit and vegetables, calcium, and fat. A particular stand out results was the amount of those meeting five servings of fruits and vegetables daily; 31% of those reporting their food preparation level as “high” met this recommendation compared to 3% of those reporting “very low” food preparation³³.

Furthermore, a large European study on adults ages 21-99 examined the relationship between food preparation skills and dietary quality. This study also found a relationship between cooking skills and healthier food choices³⁴, demonstrating the importance of cooking skills. Though these findings do not examine the adolescent age range, it is necessary to extend the age-range focus, as there is very little research concerning this topic for adolescents. It is possible that a similar association may be present in younger ages as well, and should be taken into consideration. In addition, these findings emphasize the importance of teaching cooking skills early on in life so that the habit of cooking nutritious meals at home can already be formed when young adults begin to leave their parents’ homes and do meal preparation completely on their own.

One common problem with any study on cooking skills is how exactly to measure cooking skill, so research on the topic needs to be assessed based on the instruments used to measure cooking skill. Cooking skills involve more than the frequently measured “baking” and “broiling”, but also tasks such as reading and understanding recipes and planning out a meal. In addition, a person may possess cooking skills, but may not ever use them due to time scarcity, convenience, or economic reasons. Moreover, food and

the cooking skills they require differ greatly between each ethnic/racial group, so this needs to be taken into account when conducting a cooking study³⁵.

Literature Gaps and Justification for Current Study

Currently, there are very few studies on cooking skills in middle school students. Even fewer studies exist concerning cooking interventions in middle school students, and those that do exist do not utilize a mixed methods design. The current research study will help add to the literature by examining a cooking intervention in the after-school setting for middle school students, using a mixed methods approach, which will generate data that is more reliable and valid due to its nature of incorporating both quantitative and qualitative data.

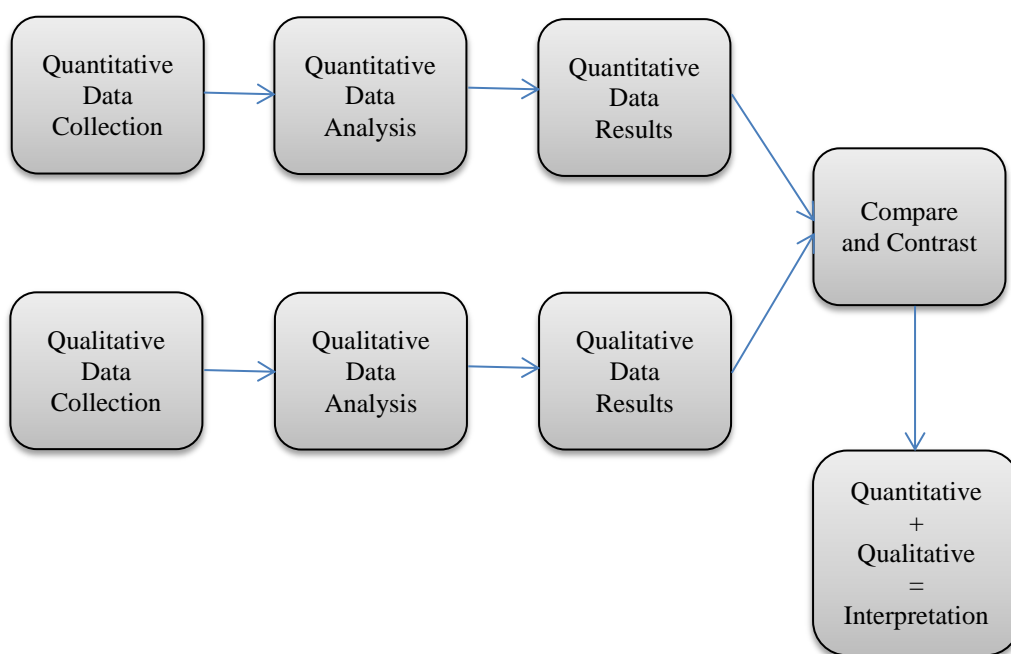
Chapter III: Methodology

Research Design

The goal of this study was to assess cooking knowledge, behavior, and attitude before and after a Cooking Club intervention in the after-school setting in middle school students. A mixed methods triangulation design, specifically the convergence model, was used. Figure 1 shows a diagram of the convergence model. Approval for use of the students for this study was granted by the participating school A on February 6th, 2012 (see Appendix A). IRB approval was granted on April 5th, 2012 (see Appendix B) after completion of the appropriate application.

Figure 1.

Triangulation Design: Convergence Model³⁶



Subjects

Due to the higher prevalence of obesity in low-income middle schools in Lincoln, Nebraska, middle school students were the target population. Schools were recruited based on a free/reduced meal percentage of over 50%. Male and female students participating in Lincoln Public School's after school club sponsored by Lincoln's Community Learning Centers (CLC) were eligible to participate in this study. Participants were sampled through convenience sampling, as volunteers who choose to participate in KidQuest Cooking Club. Students were given the choice to participate in Cooking Club without participating in this study, per their assent and their parent(s)' consent. There were no consequences for choosing not to participate in this study. Participants did vary week-to-week and did not always come to every session, as after school clubs do not require weekly attendance.

For this study, three schools were originally sampled, each with approximately 20-25 students per week. Due to unforeseen circumstances, two schools could not be included in this study. The remaining school, School A, had approximately 25 students on a regular basis. Sixteen of those students did not return the required consents to participate in data collection, so were not included in this study. Ten of those students signed a youth assent form and returned a signed parent consent form, and were the final sample size included in this study. Eight of these students participated in the pre-quantitative data collection, ten in the post-quantitative data collection, ten in ongoing quantitative data collection, and seven in the focus groups due to periodic attendance. Two of these participants were boys and eight of these participants were girls. Two

students were Hispanic, one was Asian, and the remainder was Caucasian. Two students were in eighth grade, two in seventh grade, and six in sixth grade. Though income information was not collected on a student to student basis, the participating school had over 50% of students participating in free or reduced meal rates, so it is possible that the majority of subjects came from households of low socioeconomic status.

Intervention and Curriculum

A standard curriculum was administered at each cooking club by three UNL Nutrition and Health Sciences Graduate students. These instructors were given curriculum, but not trained to implement the curriculum.

The original Cooking Club curriculum was developed by UNL Nutrition and Health Sciences Graduate students in 2012. After development, the curriculum was then pilot tested during the spring of 2012 and revised as needed. Original curriculum was based off of the original six KidQuest lessons, focusing on food groups rather than cooking skills. Curriculum was then revised again to be pilot tested in this study, with each week emphasizing one basic cooking skill rather than food groups reflecting the KidQuest lessons. Standard instructions with purpose, lesson outline, and recipes were distributed to graduate student instructors for each lesson. The intervention lasted eight weeks and was composed of one session per week. Each week focused on one or two skills used in the kitchen along with healthy recipes that utilized these skills. The following lessons were given over the 8-week course of the intervention: orientation, large measurements, small measurements, knife skills, food safety, stove-top cooking, baking, and skill demonstration (a full description of each lesson can be found in

Appendix K). Each session lasted 45 minutes, due to the after school program's already established club time. Each session would begin with a lesson, followed by a cooking activity, then a short time period for students to eat their recipe.

Normally KidQuest and Cooking Club were taught during the same quarter on different days of the week to educate students on nutrition, physical activity, and cooking skills at the same time. For this study, KidQuest implementation concurrent with Cooking Club was not possible, so only Cooking Club was taught during the 8-week time period for this study.

Data Collection Tools

Survey:

To assess participants' own behaviors, knowledge, and attitude in regard to basic cooking skills, food safety, and parent involvement, each student completed a pre- and post- Cooking Club assessment survey (Appendix I and J). After the initial draft of the survey was developed, it was reviewed by four Registered Dietitians. It was then revised based on feedback from these reviewers.

The survey consisted of 20 statements related to cooking skills, parent involvement, and food safety. Statements assessed how students felt about their own knowledge of basic cooking skills and terms, their behaviors with cooking, their involvement in cooking with their parents, and their attitudes toward cooking. Students were to identify on a 5-point likert scale from "Strongly Agree" to "Strongly Disagree" their agreement or disagreement toward each of 20 statements. The purpose of this

survey was to determine if and how much knowledge, behavior, attitudes, and parental involvement changed in relation to cooking as a result of Cooking Club.

Observations:

Free-hand observations were taken of participants from students entering the classroom until students left. In addition, observations were taken with selected questions from a rubric (Appendix H) created by Deepa Srivastava, a Child, Youth, and Families PhD student focusing on program evaluation. The purpose of the observations was to determine if the objectives of the lessons were met, assess student attitude and behavior, and assess instructors.

Focus Group:

A focus group was completed at the end of Cooking Club to reflect upon what had occurred during Cooking Club. The purpose of this focus group was to determine knowledge gained during Cooking Club, attitude toward cooking club, behaviors after Cooking Club, aspects that may need to be changed in Cooking Club, and whether home environment changed due to Cooking Club. All questions were reviewed and revised.

Data Collection Procedure

Survey:

Surveys were distributed during the first and last session of Cooking Club. All surveys were numbered with a code in order to connect pre- and post- surveys, as well as consent forms to surveys to verify that only surveys of students who had assented (and had parent consent) were used for research purposes. The identity of each student was kept secure and not revealed to the investigator.

Students given pre- and post- surveys were instructed to answer each statement based on how they felt at that time in order to compare the difference before and after Cooking Club. Surveys were collected without names and sorted into their numeric category to be analyzed at a later time.

Observations:

Free-hand observations of students throughout the class-time were taken weekly and evaluated at the end of Cooking Club for reoccurring themes. Observations focused on student behavior and attitude. Matrix observations were taken each class period as well, focusing on instructor and youth assessment.

Focus Groups:

Focus groups were conducted in a group of seven participants, based on the total number of participants in present at the time of the focus group. Participating students were brought into a separate, empty classroom, away from the other students, and sat in a circle. The investigator explained to the students that these focus groups were completely optional and that students could choose not to participate at any time; whether they would like to leave or just would like to not answer certain questions. It was also explained that the responses recorded through these focus groups would only be heard by the investigator, but that it was still important for each participant not to say their own or any other participant's name so that everyone's response could be kept anonymous.

After verbal instructions were given and students were given a chance to leave if they wish, the investigator asked scripted questions with some leeway to ask additional questions based on student responses.

Each focus group was transcribed and coded for themes. Focus groups were triangulated for increased validity.

Data Analysis

Quantitative: Due to the small sample size, and therefore, large chance of error when analyzing data, all quantitative data was analyzed through descriptive statistics. Data were entered into the survey program Qualtrics by two University of Nebraska-Lincoln Nutrition and Health Sciences Graduate Students to decrease the chance for errors with entry. Data were exported into SPSS. Due to the small sample size (n=10), descriptive statistics were then used for analysis. Percent change from pre- to post-survey was calculated for each survey item. Items were grouped into: 1. Knowledge, 2. Behavior, 3. Attitude, and 4. Parent Interaction for analysis. Slight changes were calculated and identified in the previously mentioned groups. Quantitative observational data was analyzed using the same methods due to number of sessions (n=8).

Qualitative: Focus groups were transcribed, coded for themes, and triangulated to increase validity. Observations were transcribed and coded for themes.

Mixed Methods: Data were merged to identify matching themes between quantitative and qualitative data. Themes that did not align were also identified.

Chapter IV: Results

Demographic Results

A total of ten youth baseline and eight follow-up surveys were analyzed for this study. A total of seven subjects participated in focus groups. A total of ten subjects were present for at least some of the observation times (8 sessions). Due to the format of after-school clubs, all ten subjects were not required to be present at every session, accounting for the varied amount of subjects for each instrument. A majority of the subjects in all groups were white, female, and in the 6th grade. A detailed breakdown of the demographic characteristics of subjects can be found in Table # 1.

Table # 1 Demographic Characteristics of Subjects								
	Pre-Survey (n=10)		Post-Survey (n=8)		Focus Group (n=7)		Observations (n=10)	
Gender	Male n=2	Female n=8	Male n=1	Female n=7	Male n=2	Female n=5	Male n=2	Female n=8
Grade Level	6 th , n=6 7 th , n=2 8 th , n=2		6 th , n=5 7 th , n=1 8 th , n=2		6 th , n=3 7 th , n=2 8 th , n=2		6 th , n=6 7 th , n=2 8 th , n=2	
Race/Ethnicity	White, n=7 Hispanic, n=2 Asian, n=1		White, n=6 Hispanic, n=2		White, n=5 Hispanic, n=2		White, n=7 Hispanic, n=2 Asian, n=1	

Quantitative Results: Pre- and Post- Youth Survey

From a pre- and post- survey, a total of twenty questions were analyzed and grouped into the following categories: 1. Knowledge, 2. Attitude, 3. Behavior, and 4. Parental interaction. Tables #2-5 show the mean percentages and descriptive statistics for baseline and follow-up surveys.

Knowledge Results: In terms of knowledge post-intervention, there was a slight increase in the percentage of subjects that agreed or strongly agreed that they knew how to identify common utensils used in a kitchen (+17.5%), knew when to use different kinds of measuring cups/spoons (+17.5%), knew how to read a recipe (+17.5%), knew cooking terms such as “broil” (+12.5%), and overall knew a lot about cooking (+5%). Though fewer subjects strongly disagreed that they knew how to perform different knife cuts post-intervention, there was no change in subjects that agreed or strongly agreed. The only statements in which subjects decreased in agreement post-intervention were that they knew how to prepare food safely (-2.5%) and understood how to follow recipe directions carefully (-2%). Overall, many areas of knowledge showed improvement in the post-intervention survey.

Attitude Results: In terms of attitude toward cooking, there was a slight increase in the percentage of subjects that agreed or strongly agreed that it is important to know how to cook (+7.5%) and that they still have a desire to learn more about cooking (+3%). On the other hand, there was a slight decrease in the percentage of subjects that agreed or strongly agreed that they enjoy cooking (-2.5%) and that they feel proud of themselves upon completion of a recipe (-2.5%). Overall, there was a mix of changes in attitude post-intervention.

Behavior Results: In terms of cooking behaviors, there was a slight increase only in the percentage of subjects that agreed or strongly agreed that they can turn the oven to the correct temperature (+7.5%). There was a slight decrease in the percentage of subjects that agreed or strongly agreed that they correctly measure the amount the recipe

asks for (-5%), they create successful recipes (-15%), and they wash their hands for at least 20 seconds (-17.5%). Overall, there was very little positive change in behavior post-intervention, and mostly negative change.

Parental Interaction: In terms of parental interaction, there was a slight increase in the percentage of subjects that agreed or strongly agreed that they helped their parents prepare dinner often (+15%), their parents are proud of their ability to cook (+7.5%), and that their parents let them help out in the kitchen (+8%). There was only a slight decrease in the percentage of subjects that agreed or strongly agreed that they go grocery shopping with their parents often (-2.5%).

Table # 2 Quantitative Results: Pre- and Post- Youth Survey, Knowledge Questions		
Response	Pre-Survey (n=10)	Post-Survey (n=8)
Knowledge Questions		
1. I can name common utensils used in a kitchen by looking at them (example: I can identify the name “whisk” by seeing the object.		
a. Strongly Agree	3 (30%)	2 (25%)
b. Agree	4 (40%)	5 (62.5%)
c. Not Sure	2 (20%)	0 (0%)
d. Disagree	0 (0%)	1 (12.5%)
e. Strongly Disagree	1 (10%)	0 (0%)
2. I can identify when to use different kinds of measuring cups/spoons.		
a. Strongly Agree	2 (20%)	7 (87.5%)
b. Agree	5 (50%)	0 (0%)
c. Not Sure	1 (10%)	1 (12.5%)
d. Disagree	1 (10%)	0 (0%)
e. Strongly Disagree	1 (10%)	0 (0%)
3. I know how to perform different knife cuts, such as “chop,” “julienne,” and “dice.”		
a. Strongly Agree	2 (20%)	2 (25%)
b. Agree	3 (30%)	2 (25%)
c. Not Sure	2 (20%)	3 (37.5%)
d. Disagree	0 (0%)	1 (12.5%)
e. Strongly Disagree	3 (30%)	0 (0%)

Table # 2 Continued		
Response	Pre-Survey (n=10)	Post-Survey (n=8)
Knowledge Questions		
4. I know how to read a recipe.		
a. Strongly Agree	7 (70%)	7 (87.5%)
b. Agree	0 (0%)	0 (0%)
c. Not sure	3 (30%)	1 (12.5%)
d. Disagree	0 (0%)	1 (12.5%)
e. Strongly Disagree	0 (0%)	0 (0%)
5. I know how to follow the directions of a recipe correctly.		
a. Strongly Agree	8 (80%)	7 (88%)
b. Agree	1 (10%)	0 (0%)
c. Not sure	0 (0%)	0 (0%)
d. Disagree	0 (0%)	0 (0%)
e. Strongly Disagree	1 (10%)	1 (12.5%)
6. I know how to prepare food safely.		
a. Strongly Agree	7 (70%)	4 (50%)
b. Agree	2 (20%)	3 (37.5%)
c. Not sure	1 (10%)	0 (0%)
d. Disagree	0 (0%)	0 (0%)
e. Strongly Disagree	0 (0%)	1 (12.5%)
7. I know what cooking terms means, such as “broil,” “sauté,” and “cream.”		
a. Strongly Agree	1 (10%)	2 (25%)
b. Agree	4 (40%)	3 (37.5%)
c. Not sure	1 (10%)	2 (25%)
d. Disagree	2 (20%)	0 (0%)
e. Strongly Disagree	2 (20%)	1 (12.5%)
8. I know a lot about cooking.		
a. Strongly Agree	3 (30%)	5 (62.5%)
b. Agree	4 (40%)	1 (12.5%)
c. Not sure	3 (30%)	1 (12.5%)
d. Disagree	0 (0%)	1 (12.5%)
e. Strongly Disagree	0 (0%)	0 (0%)

Table # 3 Quantitative Results: Pre- and Post- Youth Survey, Attitude Questions		
Response	Pre-Survey (n=10)	Post-Survey (n=8)
Attitude Questions		
9. I enjoy cooking.		
a. Strongly Agree	8 (80%)	7 (87.5%)
b. Agree	1 (10%)	0 (0%)
c. Not sure	0 (0%)	0 (0%)
d. Disagree	0 (0%)	0 (0%)
e. Strongly Disagree	1 (10%)	1 (12.5%)
10. When I am able to complete a recipe, I feel proud of myself.		
a. Strongly Agree	7 (70%)	6 (75%)
b. Agree	2 (20%)	1 (12.5%)
c. Not sure	0 (0%)	0 (0%)
d. Disagree	0 (0%)	1 (12.5%)
e. Strongly Disagree	1 (10%)	0 (0%)
11. It's important to know how to cook.		
a. Strongly Agree	7 (70%)	6 (75%)
b. Agree	1 (10%)	1 (12.5%)
c. Not sure	2 (20%)	1 (12.5%)
d. Disagree	0 (0%)	0 (0%)
e. Strongly Disagree	0 (0%)	0 (0%)
12. I wish I knew more about cooking.		
a. Strongly Agree	5 (50%)	3 (38%)
b. Agree	1 (10%)	2 (25%)
c. Not sure	2 (20%)	2 (25%)
d. Disagree	0 (0%)	0 (0%)
e. Strongly Disagree	2 (20%)	1 (13%)

Table # 4 Quantitative Results: Pre- and Post- Youth Survey, Behavior Questions		
Response	Pre-Survey (n=10)	Post-Survey (n=8)
Behavior Questions		
13. I can correctly measure the amount the recipe asks for.		
a. Strongly Agree	5 (50%)	6 (75%)
b. Agree	3 (30%)	0 (0%)
c. Not sure	1 (10%)	1 (12.5%)
d. Disagree	0 (0%)	0 (0%)
e. Strongly Disagree	1 (10%)	1 (12.5%)
14. I can turn the oven to the correct temperature.		
a. Strongly Agree	7 (70%)	7 (87.5%)
b. Agree	1 (10%)	0 (0%)
c. Not sure	1 (10%)	0 (0%)
d. Disagree	0 (0%)	0 (0%)
e. Strongly Disagree	1 (10%)	1 (12.5%)
15. Snacks/meals turn out well when I make a recipe.		
a. Strongly Agree	6 (60%)	5 (62.5%)
b. Agree	3 (30%)	1 (12.5%)
c. Not sure	0 (0%)	0 (0%)
d. Disagree	0 (0%)	0 (0%)
e. Strongly Disagree	1 (10%)	2 (25%)
16. When I wash my hands, I scrub them with soap for at least 20 seconds.		
a. Strongly Agree	7 (70%)	5 (62.5%)
b. Agree	1 (10%)	0 (0%)
c. Not sure	1 (10%)	1 (12.5%)
d. Disagree	0 (0%)	1 (12.5%)
e. Strongly Disagree	1 (10%)	1 (12.5%)

Table # 5 Quantitative Results: Pre- and Post- Youth Survey, Parental Interaction		
Response	Pre-Survey (n=10)	Post-Survey (n=8)
Parental Interaction Questions		
17. I go grocery shopping with my parents often.		
a. Strongly Agree	6 (60%)	6 (75%)
b. Agree	3 (30%)	1 (12.5%)
c. Not sure	0 (0%)	0 (0%)
d. Disagree	0 (0%)	1 (12.5%)
e. Strongly Disagree	1 (10%)	0 (0%)
18. I help my parents prepare dinner often.		
a. Strongly Agree	3 (30%)	3 (37.5%)
b. Agree	3 (30%)	3 (37.5%)
c. Not sure	2 (20%)	0 (0%)
d. Disagree	2 (20%)	1 (12.5%)
e. Strongly Disagree	0 (0%)	1 (12.5%)
19. My parents are proud of my ability to cook.		
a. Strongly Agree	6 (60%)	6 (75%)
b. Agree	2 (20%)	1 (12.5%)
c. Not sure	2 (20%)	0 (0%)
d. Disagree	0 (0%)	1 (12.5%)
e. Strongly Disagree	0 (0%)	0 (0%)
20. I like when my parent(s) let me help out in the kitchen.		
a. Strongly Agree	7 (70%)	7 (88%)
b. Agree	1 (10%)	0 (0%)
c. Not sure	1 (10%)	0 (0%)
d. Disagree	0 (0%)	1 (13%)
e. Strongly Disagree	1 (10%)	0 (0%)

Quantitative Results: Observation Matrix

Next, quantitative observational results were analyzed and grouped into the following categories: instructor assessment, youth participation in session, and student attitude toward session. Tables # 6 and 7 shows the mean percentages and descriptive statistics for observations.

Instructor Assessment: During the eight sessions for the intervention, instructors completed the majority of planned topics (87.5%), with only one topic rescheduled and combined with another lesson. Instructors were usually (62.5%), but not always, clear about the purpose of and expectations for each lesson. Instructors did though, have knowledge on the topic at hand and skills related to the cooking activity (100%). Instructors involved youth in some cooking activities more than others, and a majority of the time (62.5%), did not ask them questions to spark their interest or get them thinking about the lesson.

Youth Participation in Session: For the most part, youth were focused/interested during the 45 minute sessions as a whole (62.5%), but actively participated more in the cooking activity than they actively listened to the preceding lesson. Youth actively participated in cooking activity and worked cooperatively more times than not. Youth did not ask questions often (25%).

Student Attitude Toward Session: Students showed a willingness to participate in activities for the most part (75%), and also showed enjoyment during each 45 minute session (62.5%).

Table # 6	
Quantitative Results: Observational Data, Instructors	
Response	Sessions (n=8)
Instructor Assessment	
1. Did the instructor complete today's topic?	
a. Yes	7 (87.5%)
b. No	1 (12.5%)
2. Instructor communicates goals, purpose, or expectations for cooking lesson and activities.	
a. Strongly Agree	0 (0%)
b. Agree	5 (62.5%)
c. Neutral	1 (12.5%)
d. Disagree	1 (12.5%)
e. Strongly Disagree	0 (0%)
f. Not applicable	1 (12.5%)
3. Instructor has knowledge about the topic.	
a. Strongly Agree	7 (87.5%)
b. Agree	1 (12.5%)
c. Neutral	0 (0%)
d. Disagree	0 (0%)
e. Strongly Disagree	0 (0%)
f. Not applicable	0 (0%)
4. Instructor has skills related to the cooking activity.	
a. Strongly Agree	7 (87.5%)
b. Agree	1 (12.5%)
c. Neutral	0 (0%)
d. Disagree	0 (0%)
e. Strongly Disagree	0 (0%)
f. Not applicable	0 (0%)
5. Instructor involves youth in cooking activity	
a. Strongly Agree	2 (25%)
b. Agree	2 (25%)
c. Neutral	1 (12.5%)
d. Disagree	2 (25%)
e. Strongly Disagree	0 (0%)
f. Not applicable	1 (12.5%)
6. Instructors ask youth "why," "how," and "what if" questions.	
a. Strongly Agree	0 (0%)
b. Agree	3 (37.5%)
c. Neutral	0 (0%)
d. Disagree	4 (50%)
e. Strongly Disagree	1 (12.5%)
f. Not applicable	0 (0%)

Table # 7	
Quantitative Results: Observational Data, Youth	
Response	Sessions (n=8)
Youth Participation in Session	
7. Youth are interested/focused.	
a. Strongly Agree	3 (37.5%)
b. Agree	2 (25%)
c. Neutral	2 (25%)
d. Disagree	1 (12.5%)
e. Strongly Disagree	0 (0%)
f. Not applicable	0 (0%)
8. Youth actively listen to a lecture/presentation/demonstration	
a. Strongly Agree	4 (50%)
b. Agree	0 (0%)
c. Neutral	1 (12.5%)
d. Disagree	2 (25%)
e. Strongly Disagree	0 (0%)
f. Not applicable	1 (12.5%)
9. Youth actively participate in cooking activity.	
a. Strongly Agree	2 (25%)
b. Agree	2 (25%)
c. Neutral	2 (25%)
d. Disagree	1 (12.5%)
e. Strongly Disagree	0 (0%)
f. Not applicable	1 (12.5%)
10. Youth ask questions.	
a. Strongly Agree	0 (0%)
b. Agree	2 (25%)
c. Neutral	1 (12.5%)
d. Disagree	3 (37.5%)
e. Strongly Disagree	1 (12.5%)
f. Not applicable	1 (12.5%)
11. Youth work cooperatively with each other.	
a. Strongly Agree	1 (12.5%)
b. Agree	5 (62.5%)
c. Neutral	1 (12.5%)
d. Disagree	0 (0%)
e. Strongly Disagree	0 (0%)
f. Not applicable	1 (12.5%)

Table# 7 Continued	
Response	Sessions (n=8)
Student Attitude Toward Session	
12. Willingness of students to participate	
a. Very High	3 (37.5%)
b. High	3 (37.5%)
c. Neutral	2 (25%)
d. Low	0 (0%)
e. Very Low	0 (0%)
f. Not applicable	0 (0%)
13. Students' level of enjoyment for lesson/instructions	
a. Very High	2 (25%)
b. High	3 (37.5%)
c. Neutral	1 (12.5%)
d. Low	1 (12.5%)
e. Very Low	0 (0%)
f. Not applicable	1 (12.5%)
14. Students' level of enjoyment for cooking activity	
a. Very High	3 (37.5%)
b. High	2 (25%)
c. Neutral	2 (25%)
d. Low	0 (0%)
e. Very Low	0 (0%)
f. Not applicable	1 (12.5%)

Qualitative Results: Focus Group

One focus group (n=7) was conducted with one Lincoln Public Middle School, which qualified for Supplemental Nutrition Assistance Program-Education (SNAP-Ed). Listed in table # 8 are the themes and supporting evidence from the focus group that were identified by three independent researchers. The following are the identified themes: 1. Knowledge gained, 2. Introduction to new foods, 3. Evaluation of foods, 4. Parent/student interaction with cooking, 5. Students make basic or non-nutritious home meals, 6. No behavior change.

Knowledge gained: Participants gained knowledge in terms of cooking skills. Participants identified using an oven, setting the oven to the correct temperature, stove-top cooking, measuring the right amount stated in a recipe, using and holding a knife safely and correctly, washing hands, and cleaning cutting boards as skills that they learned during the semester. No nutrition-related knowledge was identified by the participants; in fact, suggestions for future Cooking Clubs included more unhealthy foods.

Introduction to new foods: Participants noted that Cooking Club recipes gave them the opportunity to try new foods that they had not yet had the chance to try, such as quesadillas, yogurt parfaits, yogurt on its own, bananas, and chicken salad.

Evaluation of foods: Overall, there was a wide array of opinions on each recipe. Approximately as many participants liked each recipe as did dislike each recipe. Some reasons for not liking particular recipes included: additional sauce/dressing components, texture, and personal tastes. Those who liked recipes cited most reasons as that the

recipes were just “good,” which was not further defined, but may be attributed to personal tastes.

Parent/Student interaction with cooking: There was only one mention each of taking home a recipe to share with parents and cooking at home with parents on one occasion. Aside from this, there was little to no parent interaction with cooking indicated. Most responses indicated that participants cooked at home for their family without the help of their parents, or that they weren’t allowed to cook at all. Some even indicated that they believe their parents did not care about what they were doing afterschool, and therefore, did not share anything with them about Cooking Club even though they were given recipes to take home and share with their parents.

Students make basic home meals: Responses from participants indicated that if they were allowed to cook at home, the meals that they cooked were mainly pre-packaged meals or meals that require little to no cooking skills. Example responses included: macaroni and cheese, chicken nuggets, and popcorn.

No behavior change: After the intervention, participants indicated that nothing related to their cooking or cooking behavior had changed. Some reasons that students provided were that parents still did not allow participants to cook at home and students already had knowledge and skill before the intervention.

Table # 8 Qualitative Themes and Evidence From Participant Quotations	
Qualitative Theme	Evidence
Knowledge Gained	<p><u>When asked, "What did you learn during Cooking Club that you think was most valuable?"</u></p> <p>"Learning how to cook quesadillas on the stove." "Cooking with the oven and the correct temperature." "Measuring." <u>When asked, "Do you all remember the mini lessons we had before cooking each week? What did you learn from those lessons?"</u></p> <p>"I learned how it's important to measure the right amount of food for a recipe. And how to cook on top of a stove or how to turn the oven to the right temperature." "Or how to use a knife correctly." "...how to cut and hold a knife." "Measuring with cups and spoons." "Using an oven." "...be safe with food and clean the cutting board off."</p>
Introduction to new foods	<p><u>When asked, "were there any new foods that you tasted that you haven't tasted before?"</u></p> <p>"Quesadillas." "Yogurt, bananas, quesadillas, fruit salsa." "Yogurt parfaits." "The chicken salad stuff."</p>
Evaluation of foods	<p><u>When asked, "what part of the club did you like the most?"</u></p> <p>"Making the quesadillas!" "Yogurt parfaits." "The strawberries were the best part." "I didn't like the yogurt parfaits...I don't like yogurt in my parfaits." <u>When asked, "A few of you said what you liked the fruit salsa. What did everyone else think about it?"</u></p> <p>"It was weird." "It was good." <u>When asked, "What did you think of the peanut butter balls?"</u></p> <p>"Those were good." "I loved those." "I didn't like how sticky they were." "I didn't like the raisins, it was a weird taste." <u>When asked, "What did you all think of the chicken salad?"</u></p> <p>"Weird, weird." "I liked it." "It was weird with the orange juice." "It would be good if it was without the mayonnaise." "I don't like mayonnaise."</p>

Table #8 Continued	
Parent/student interaction with cooking	<p><u>When asked, "Think back to when you first joined cooking club...has cooking at home changed since you got involved in cooking club?"</u></p> <p>"My mom won't let me cook."</p> <p><u>When asked, "what kind of meals do you or your family cook at home?"</u></p> <p>"I made a dessert with my mom. We made it awhile ago and I always wanted to make it again."</p> <p><u>When asked, "Did you take home any of the recipes to show your parents about what you've been doing?"</u></p> <p>"Yes, I showed her the pizza quesadillas and she might let me make them."</p> <p>"No."</p> <p>"No, my mom won't let me cook anyway."</p> <p><u>When asked, "aside from the original forms we sent home to give your parents, did you tell your parents or siblings anything about cooking club."</u></p> <p>All responses: "No."</p> <p><u>When asked, "Do you think your parents would like to know more about what you're doing in cooking club?"</u></p> <p>"No, my mom doesn't care."</p>
Students make basic or non-nutritious home meals	<p><u>When asked, "What kind of meals do you or your family cook at home?"</u></p> <p>"I cook chicken nuggets."</p> <p>"I can make toast at home."</p> <p>"Popcorn."</p> <p>"I cook macaroni and cheese. I always cooked before though, nothing has changed. I always cooked macaroni and cheese for my mom and brother."</p> <p>"I'm only allowed to use the microwave, so I make stuff in there."</p>
No behavior change	<p><u>When asked, "has anything changed in terms of you cooking, or how you cook, since you joined cooking club?"</u></p> <p>"No, not really."</p> <p>"No, my mom still doesn't let me cook."</p> <p>"No, I already knew how to cook before."</p> <p>"No."</p>

Qualitative Results: Freehand Observations

Aside from the focus group, observations were also taken during each session (n=8). Listed in Table #9 are the themes and supporting evidence identified from the recorded observations. In analyzing these freehand observations, themes can be categorized based on several questions. The following themes were identified: 1. Down-time, 2. Times of increased engagement, 3. Times of decreased engagement, 4. Teaching opportunities, 5. Group cooperation, 6. Skill practice, and 7. Recipes

Down-Time: During several of the sessions, there was a 10-15 minute excess of time in which participants had nothing to do. This resulted in increased chatting about unrelated subjects, rowdiness, playing on phones, and general off-task behavior. Furthermore, several times food was prepped by instructors before the session began and one student from each group would line up to receive the food for their group, leaving the rest of the group with nothing to do but stand around and chat with each other. Another common instance was when groups were too large (such as in groups of five or six students), so there weren't enough tasks for everyone to perform, leaving some of the students standing around and doing nothing.

Times of Increased Engagement: Researcher assessment of engagement in students was based off of decreased noise level (talking with other participants), increased eye contact with teachers, body movements (such as leaning in toward the direction of the teacher), decreased distracted behavior (such as looking around the room or looking at the clock), and student participation (such as answering or asking questions during the lesson). Increased engagement was noted when students were asked questions

during the lesson, when students were invited to come up close and watch a demonstration, when teachers and students read the recipe as a group, when teachers split up and worked with a small group of students rather than teaching to the entire class, when teachers demonstrated skills with individual groups, when students were in groups of three or four, and when teachers affirmed student skills.

Times of Decreased Engagement: Engagement was based on the same criteria as above. Decreased engagement of participants occurred when little direction was given, when recipes were handed out before beginning a lesson, when students were allowed to be in large groups of five or six students, and when participants were given exceptionally simple recipes.

Teaching Opportunities: Throughout the 8-week course, there were several opportunities in which a lack of knowledge related to the lesson at hand appeared, but students were not given the information to gain knowledge. These subjects in which students lacked knowledge could be incorporated into future lessons. Some areas included: adding and subtracting measurements, choosing the correct cooking supplies for a recipe, and basic nutrition.

Group Cooperation: Group work was required during the entire 8-week course due to the amount of students versus the amount of cooking equipment. Students demonstrated the ability to work cooperatively with each other on many occasions including reading recipes together, sharing cooking responsibilities, and cleaning as a group. At times, students even discussed how they were going to accomplish a particular recipe, and used their critical thinking together to solve problems.

Skill Practice: Due to time restraints, about half of the time, there was lack of time for skill practice, resulting in students not being given the chance to perform the skill that was demonstrated during the lesson. Some of these instances include teachers cutting up produce before students arrive which resulted in students not practicing knife skills, teachers measuring out ingredients for the students rather than letting them measure, teachers telling students what measuring cups to use rather than letting them decide for themselves, and lack of the proper amount of measuring utensils for all groups to demonstrate measuring skills properly. On the other hand, the other half of the time at least some students were able to demonstrate some skills. Some of these instances included each student being able to cook their own quesadilla on the stove-top, some students being able to cut up a portion of the food for recipes, some students being able to portion and measure food. Overall, with the amount of food that was prepped beforehand, not all students were able to practice the skills because there weren't enough tasks left for them all to perform one.

Recipes: Throughout the sessions, there were instances that could have been altered to improve the learning environment for the participants. Recipes that were chosen did not always fit with the specific lesson at hand, sometimes requiring far more skills than had yet been taught, and sometimes requiring far fewer skills than participants had learned to that point. The final lesson, which was to test skill demonstration, only tested one to two skills at most, had slightly inaccurate judging, and provided no incentive to get participants excited about the competition. In addition, recipes did not provide enough tasks for all members to participate.

Table # 9 Qualitative Themes and Evidence from Freehand Observations	
Qualitative Themes	Evidence
Down-Time	<p>“A lot of down time between cleaning and getting to eat...”</p> <p><i>In reference to the beginning of class:</i> “There’s a lot of loud talking and messing around.”</p> <p>“When one group member at a time comes up for ingredients, the others have nothing to do because there’s nothing else in the recipe for them to work on...chatting, playing on the phone, etc.”</p> <p>“Not a lot for kids to do today-smoothies may be too ‘simple.’”</p>
Times of Increased Engagement	<p>“Format is interactive-[teacher] asks students to raise their hands and read the 1st direction and so on. This got more students to quiet down and be attentive. Students eager to answer questions and read through recipe at this point.”</p> <p>“Teachers had students gather around one large table in the front of the class rather than having them stay in [their] seat..helpful for everyone to see...kids are more attentive to the lesson; watching and paying attention, not talking.”</p> <p>“Teachers ask questions for student involvement...Students are attentive and answer questions; seem excited to participate and interact.”</p> <p>“Instructor asks students questions during lesson, keeping them engaged.”</p> <p>“After lesson, teachers pass out recipe and go through recipe as a group, allowing students to participate. Each student can raise their hand and give the next step in the recipe...Students were very attentive.”</p> <p>“Teachers handed out recipes, then split up and one teacher worked with one or two kitchens rather than the entire classroom. Noise level [was] fairly low...students [were] very attentive with one teacher to about four or five students.”</p> <p><i>When teachers asking questions about stove-top cooking</i> “Students were very attentive during lesson...Eager to answer questions and share that they had used the stovetop before.”</p>

Table #9 Continued	
Times of Increased Engagement Continued	<p><i>When not given a recipe:</i></p> <p>“Students were still confused on what they were making without the recipe, but this prompted them to think when the teachers asked them what goes down on a pizza first. Students talked to each other in groups and discussed what they should put down first. Prompted students to...think for themselves.”</p> <p>“[Teachers] went around to every kitchen and helped by demonstrating moving food around in the pan when students were not doing it correctly, and then encouraged students to them demonstrate what they just showed...students were very attentive this way and immediately improved their skills.”</p> <p>“[Students] seemed to enjoy the cooking activity more when they received affirmations on their skills.”</p>
Times of Decreased Engagement	<p>“Recipes are handed out to each table and students are instructed to read the recipe together as a table first. Students [are] not on task, talking to their tables about topics outside of cooking club; not talking about the recipe.”</p> <p>“Teachers hand our recipes at [the] very beginning of the session with no instruction before getting everyone’s attention. This causes kids to be inattentive when teachers do want attention because they are distracted by the recipe that they’ve been handed...Takes awhile to quiet down, kids [are] talking about the recipe amongst each other.”</p> <p>“Half of the groups are good at delegating tasks with each student doing a tasks in the recipe while the other half of the groups have most students standing around and watching as one or two people do most things. Work appears to separate better in small groups of about three-everyone is doing something, more productivity, on task. Students easily get off task and run around or start doing something else in large groups (five or six people).”</p>

Table #9 Continued	
Teaching Opportunities	<p>“Not all students are able to figure out that they will need to add [measurements] to get to the total [measurement].”</p> <p>“Quote from student: ‘We don’t have a one and a half tablespoon.’”</p> <p>“Mixing bowls chosen were too small in some groups.”</p> <p><i>When asked by the teacher about a recipe, “What is the main food group?” Answers included:</i></p> <p>“Oatmeal”</p> <p>“Peanut butter”</p> <p>“Protein”</p>
Group Cooperation	<p>“Students are good at working cooperatively with each other and reading recipes as a group.”</p> <p>“Good at cooperatively cleaning.”</p> <p>“Working together to complete a recipe.”</p> <p>“Students good at working as a group to clean up.”</p> <p>“Smaller groups of 3 or 4 had all members almost always participating.”</p> <p>“Most kids were very good at working together in groups.”</p>
Skill Practice	<p>“Teachers tell students what measuring utensils to bring up to the main table, and then teachers are measuring out ingredients for students when students bring up their utensils.”</p> <p>“Teachers cut up about half of the fruit ahead of time.”</p> <p>“Students were given the opportunity to measure themselves this week, but there was a lack of enough measuring cups- students can’t demonstrate correct measuring skills and one teacher suggests they get a larger cup and fill it halfway.”</p> <p>“Teachers measure out dressing for students, but students do get to measure their own produce.”</p> <p>“Recipe allowed each student to make their own pizza quesadilla on the stove top, giving everyone a chance to learn this skill.”</p>

Table #9 Continued	
Recipes	<p>“Some students using liquid cups to measure granola and some measuring is inaccurate (overfilling/under-filling); there was no lesson on measurement at the beginning of class.”</p> <p>“Knife skills not taught for safety with cutting fruit even though there is fruit to cut...”</p> <p>“Not enough different tasks in these simple recipes to allow 5 or 6 people to all participate at one time.”</p> <p>“Only groups with bananas had to cut fruit- recipe doesn’t give the opportunity to demonstrate skills learned throughout the course.”</p>

Mixed Methods Results

Quantitative data from pre- and post- youth surveys and observation matrices were merged with qualitative data from the focus group and freehand observations in order to produce a list of common themes between the different data sets and to produce a list of themes that stood alone. The following were the identified merged themes: 1. Knowledge, 2. Behavior, 3. Attitude/Engagement, 4. Parental Interaction, 5. Instructor Evaluation, and 6. Group Cooperation. Table #10 highlights the merged themes.

Table #10 Mixed Method Results: Qualitative and Quantitative Results Merged			
Theme	Qualitative	Quantitative	Mixed Methods
Knowledge	<p>Post-intervention, participants described knowing:</p> <ul style="list-style-type: none"> • How to cook on the stove • Cooking with the oven • Setting the oven to the correct temperature • Measuring correctly • The importance of measuring • Food safety <p>Participants indicated that they were exposed to foods they had never tried, increasing their knowledge of different tastes and textures. Some of these include:</p> <ul style="list-style-type: none"> • Quesadillas • Yogurt • Bananas • Fruit salsa • Chicken Salad <p>Participants still lacked knowledge in basic areas that were not included in lesson</p> <ul style="list-style-type: none"> • Not all students can figure out how to add measurements to get the total measurement, as this was not taught. • Not all students understand basic food groups. 	<ul style="list-style-type: none"> • The percentage of students who knew how to identify common kitchen utensils increased by 17.5% • The percentage of students who knew when to use different measuring cups/spoons increased by 17.5% • The percentage of students who know how to read a recipe increased by 17.5% • The percentage of students who knew cooking terms increased by 12.5% 	<p>Participants gained knowledge on various basic cooking skills.</p> <p>Participants gained knowledge on basic cooking utensils and materials used in the kitchen.</p> <p>Participants gained knowledge in cooking literacy, including reading recipes and identifying cooking terms.</p> <p>Participants gained knowledge in food safety.</p> <p>Participants do still have gaps in basic knowledge from areas in nutrition and cooking that were never taught, leaving opportunities for additional teaching.</p>
Behavior	<p>All participants reported no behavior change since participating in Cooking Club</p>	<ul style="list-style-type: none"> • The percentage of students who reported they correctly measure the amount the recipe asks for decreased by 5% • The percentage of students who reported they created successful recipes decreased by 15% • The percentage of students that reported they wash their hands for at least 20 second decreased by 17.5% 	<p>Participants overall had either no change in behavior after the intervention, or had negative behavior changes.</p>

Table #10 Continued			
Theme	Qualitative	Quantitative	Mixed Methods
Attitude/ Engagement	<p>Observations demonstrating students' attitude:</p> <ul style="list-style-type: none"> • Students eager to answer questions and read through recipe. • Teachers ask questions for student involvement... Students are attentive and answer questions; seem excited to participate and interact. • [Students] seemed to enjoy the cooking activity more when they received affirmations on their skills. 	<ul style="list-style-type: none"> • 75% of the time, participants had either a high or very high willingness to participate in the cooking activity • 62.5% of the time, participants had either a high or very high level of enjoyment for the lesson/ instructions • 62.5% of the time, students had either a high or very high level of enjoyment for the cooking activity. 	<p>Participants showed a willingness and enjoyment to participate in cooking activities.</p> <p>Participants improved their attitudes when their actions were positively affirmed.</p> <p>Participants increase their excitement to participate when they feel included in the lesson or activity by their teachers.</p>
Parental Interaction	<p>Only two students stated that they had cooked with their parents before or had asked about making a particular recipe at home.</p> <p>A majority of students reported that they did not cook with their parents and cooked by themselves if they did cook at all</p> <p>One participant reported that his/her "mom doesn't care" about what they are doing.</p> <p>Almost all participants reported that they shared nothing from Cooking Club with their parents</p> <p>Parents allow, or are unaware that, participants cook basic or unhealthy foods at home.</p>	<ul style="list-style-type: none"> • The percentage of participants that reported that they helped their parents prepare dinner often increased by 15%. • The percentage of participants that reported that their parents are proud of their ability to cook increased by 7.5%. • The percentage of participants that reported that their parents let them help out in the kitchen increased by 8%. 	<p>Participants reported mixed responses about parental interaction.</p> <p>Some participants cooked in the kitchen with their parents and thought their parents were proud of their ability to cook.</p> <p>Some participants did not cook with their parents at all.</p> <p>Few of the participants shared anything with their parents about Cooking Club.</p>

Table #10 Continued			
Theme	Qualitative	Quantitative	Mixed Methods
Instructor Evaluation	<p>Students were more engaged when instructors:</p> <ul style="list-style-type: none"> • Asked students questions • Invited students to participate in recipe reading • Invited students to come close to the front to see a demonstration • Worked with 4-5 students with a lesson rather than the entire classroom • Did not give students a recipe, and then challenged them to think critically and problem-solve • Affirmed student skills <p>Students were less engaged when instructors:</p> <ul style="list-style-type: none"> • Handed out recipes with no instruction • Did not include participants by asking probing questions • There are long periods of “down-time” in which students have nothing to do <p>Instructors minimized participant opportunities for skill practice by:</p> <ul style="list-style-type: none"> • Telling students what measuring utensils to use • Measuring ingredients for students • Cutting up ingredients before club started • Not having enough appropriate supplies • Choosing recipes that don’t always highlight the skills being taught in the day’s lesson 	<p>On a scale of strongly agree to strongly disagree, the researcher agreed or strongly agreed that instructors:</p> <ul style="list-style-type: none"> • Communicated goals 62.5% of the time • Had knowledge of the topic 100% of the time • Had skills related to the cooking activity 100% of the time • Involved youth in cooking activity 50% of the time • Asked youth questions 37.5% of the time 	<p>Participants were more engaged in lessons and cooking activities when instructors used more interactive teaching methods.</p> <p>Participants were less engaged with increased down-time.</p> <p>Instructors did not ask youth questions or involve them in cooking activities as often as they could have.</p> <p>Instructors minimized opportunities for participants to practice the skills taught in each lesson.</p> <p>Instructors did not always choose appropriate recipes.</p>
Group Cooperation	<p>When observing participants, they demonstrate group cooperation when:</p> <ul style="list-style-type: none"> • Reading a recipe as a group • Working to complete a recipe • Cleaning up their kitchen <p>Students are observed to be better at group cooperation when they work in smaller groups of 3-4 rather than larger groups of 5-6.</p>	<p>On a scale of strongly agree to strongly disagree, the researcher agreed or strongly agreed that youth work cooperatively with each other 75% of the time.</p>	<p>Participants work well together as a group.</p> <p>Participants work best in smaller groups.</p>

Chapter V: Discussion and Conclusion

Discussion

This study was designed as a mixed methods study in order to combine quantitative youth surveys and observations with qualitative focus groups and observations to generate a well-rounded picture of the effects of a cooking intervention on middle school youth. The purpose of this study was to determine if a cooking intervention in the after-school setting would have an effect on the youth's knowledge, attitudes, behaviors, and parental interaction. Moreover, its purpose was to determine the teaching method that resulted in the most engagement. The researcher hypothesized that this intervention would result in increased cooking knowledge, a more positive attitude toward cooking, more cooking behaviors, and increased parental interaction in regards to cooking. In addition, the researcher hypothesized that a more interactive teaching method would be the most instrumental type of teaching method to create these changes.

Although there were only a total of seven to ten participants between the different data collection methods, resulting in a sample size that was too small to accurately determine statistical significance without a large amount of error, it was still possible to align qualitative and quantitative data to generate six overall categories.

Knowledge

Participants reported an increased knowledge, mostly in the area of cooking skills, but also in reading recipes and identification of basic cooking utensils, supporting the hypothesis that Cooking Club would increase knowledge. Both quantitatively and qualitatively, there were results showing this increase in knowledge, adding validity due

in this result due occurring in the two types of data. Though several of the participants started with decent baseline knowledge of cooking skills based on the quantitative pre-survey, there was still a slight increase quantitatively and multiple learned skills identified during focus groups.

Attitude/Engagement

In addition, a majority of participants had a positive attitude and were engaged in Cooking Club. This is partially expected due to the fact participants can choose which after school club they want to participate in from a list of clubs, and these particular students chose to participate in Cooking Club instead of the other clubs that were offered. Participants did not indicate any more of a positive attitude toward cooking post-intervention, not supporting the original hypothesis that positive attitude would increase. It is possible that more time needs to be spent, or different methods need to be used, working on increasing excitement and attitude toward cooking. Conversely, based on the observations of engagement and positive attitude toward cooking to begin with, it is possible that no change was seen because most participants already enjoyed cooking and there wasn't much room for change. Again, this is likely due to the fact that participants actively chose this club and started out with a positive attitude, allowing little room for improvement.

Behavior

The results did not support the hypothesis that Cooking Club would increase cooking behaviors. Participants either reported that their behaviors had not changed at all since cooking club, citing that they had already cooked before or did not cook

more/differently afterwards regardless, or their correct behaviors decreased. Less students reported being able to measure correctly, creating successful recipes, and washing their hands for the correct amount of time. Though participants reported an increase in knowledge, this did not translate to behavior, showing that more effort needs to be devoted to what needs to be done in order to create behavior change. Though knowledge is a beneficial increase, if it is not translating to a change in behavior, then there is still a significant problem. It is possible that a 45-minute session for a duration of 8 weeks is not substantial enough to result in behavior change, and a follow-up study could be conducted for a longer session time or total duration to determine if the time or amount of sessions can effect behavior.

Parental Interaction

Parental interaction was another area that did not fully support the researcher's hypothesis that students' interactions with parents involving cooking would increase after the intervention. There was a mixed bag of responses, with quantitative results showing a slight increase in parental interactions, and the majority of qualitative results showing little to no interaction with parents. Many students stated that they never cooked with their parents, and one participant even stated that his/her "mom doesn't care" about what he/she was doing. Though recipes were handed out every session so students could take them home and make the recipe with their family, all participants reported that they shared nothing from Cooking Club with their parents. It is possible that the recipes handed out to participants to take home were not the most appropriate take-home

materials. Future studies could investigate what materials would get students to increase their engagement with their parents concerning cooking.

Teaching Methods

Lastly, it was determined that more interactive teaching methods were most effective at engaging youth during cooking sessions. Some of the methods that were most effective included: decreasing down-time, asking youth questions, and giving youth opportunities to practice each lesson's skills. This finding supports the hypothesis that more interactive teaching methods that involve the youth in learning (rather than a traditional lecture-type teaching method), are more effective at getting youth engaged in the learning process. Since Cooking Club is after school and students have been in classes for approximately eight hours, it is logical that a more interactive teaching method would be more effective rather than a lecture-type method in which students would have to sit for an even longer period of time.

Barriers and Recommendations

Though the quantitative results of this study do not show significance, there was still ample qualitative data that helped to support quantitative findings. In addition, the results from this study help pinpoint some barriers to intervention in the after-school setting, and recommendations to overcome such barriers for future research for the following areas: 1. Curriculum, 2. Participation and sample size, 3. Supplies, 4. Recipes, and 5. Focus groups.

Curriculum

The first area in the Cooking Club curriculum itself that could be improved upon for future cooking interventions would be to establish a standard delivery method of material for teachers. The current Cooking club curriculum exists as an outline of vague points to cover for each lesson, a schedule, and recipe(s). Though the vague points allow for more interaction with the participants, teachers aren't always using this opportunity to interact with the students. Results showed that when questions were asked of the students and when students were allowed to participate in the cooking activity to a fuller extent (such as measuring food themselves rather than the teacher measuring food), they were much more engaged in the lesson. A simple addition of probing questions for students and directions for teachers on how to make a lesson more interactive would help to clear up any confusion for instructors and give them better direction for teaching.

In addition, if curriculum clearly indicated that participants should all be given the opportunity to demonstrate skills, this has the potential to improve their learning. Many times instructors would measure out ingredients for students, cut recipe ingredients before a session started, or tell students what to do rather than guiding them to the answer. Much more engagement was shown when students were guided to an answer rather than told one and when they had the opportunity to participate more in the cooking activity. Though preparing the ingredients before each session helps with time limitations, it does not allow the club's objective of teaching the participants cooking skills, to be met as best it could.

Participation and Sample Size

The after-school club's format allows students to choose what club they would like to participate in from week-to-week, meaning that they can choose Cooking Club one week, and a completely different club the next week. This results in periodic attendance, which hinders data collection. Not only are some participants not present on main data collection days due to this format, but they also are not learning all of the skills that are taught, and yet are still being tested on what has changed since joining Cooking Club. For this reason, data can get skewed. In addition, with participants attending fewer sessions, they have less opportunity to begin a behavior change; a possible reason for the behavior results of this study.

Aside from this issue, there is also the issue of a small sample size that hindered this study. Though there were many more participants overall in Cooking Club, only a total of ten returned signed youth assent and parent consent forms.

Both of these issues could be improved by offering incentives. For participation on a weekly basis, an incentive could be offered for participants who attend every single Cooking Club session for the eight weeks. Or, there could be a drawing for a small prize every week. For returning youth assent and parent consent forms, there could be an incentive for the family, such as a gift card for groceries.

Supplies

For Cooking Club, the home economics classroom of the participating school was used. Therefore equipment used was mostly what was available in the classroom. Several times there were not enough mixing bowls, knives, or measuring cups. On one

occasion, an instructor told a participant to fill a one-cup measuring cup halfway to get a half-cup amount, which does not teach participants the skills that the lessons intend to teach them. It is easy to assume that a home economics room will have everything necessary to create a recipe, but this is a common assumption that can hinder a lesson very easily. This barrier could be avoided by an inventory of the participating school's classroom before the first session has started. If there were missing supplies that were necessary for a particular lesson, they could either be purchased if funds allowed, or groups could be formed based on the amount of supplies available for the lesson at hand.

Recipes

Many times, the recipes chosen for each lesson were not appropriate for the lesson at hand. For instance, one of the earlier recipes in the curriculum required several cooking skills that had not yet been taught, and were in the curriculum to be taught at a later date. Moreover, the final recipes that were intended for skill demonstration of all the skills learned over the 8-week course were smoothies, requiring only one to two or the skills taught during the course. It would be beneficial in the future for recipes to be chosen for the lesson that particular week that focus highly on the skills that is being taught. This serves several purposes: 1. Participants can get several opportunities to practice the skill, 2. Participants are given the opportunity to progress to more difficult recipes as their cooking skills progress, 3. Participants are not challenged with too many difficult skills too early. Though it is not realistic that a recipe only includes one skill at a time, there are recipes available that vary in difficulty level and include a varying amount of skills. Recipes should be selected based on this idea to match the skill being taught.

Since lessons are only about two minutes in length, the main learning opportunity is the cooking activity, so this should therefore be given more thought each week.

Focus Groups

The researcher conducted one focus group with a group of seven participants. This was due to the limited time-frame to conduct focus groups and the after-school program coordinator's advice that the researcher would not likely be able to track down all of these participants again due to the format of the after school program and the intermittent attendance. This both limited the amount of data collected, and the quality of data. With more participants in the one group, one or two of the participants didn't want to talk, even when prompted by the researcher. In addition, there were a couple participants who were very rowdy. Many times the phrase, "I won't burn down the house" was shouted by one of the participants in order to get the others to laugh. Consideration should be taken of the personalities of the students eligible to participate in the focus groups and groups should be formed accordingly. Smaller groups may be necessary to generate more data.

Conclusion

Overall, the participants in this intervention improved upon their knowledge with the most effective teaching method being more interactive. Though attitude, behavior, and parental interaction did not improve post-intervention, this study showed some promise that at least some change can be made over an 8-week period. With modifications and improvements to this intervention, it is possible that more changes could be made.

This study helped to determine several important considerations when implementing a cooking intervention in an afterschool environment. The following should be considered when creating such an intervention: 1. Curriculum used and direction for instructors, 2. Ways to optimize participation and increase sample size, 3. Obtaining necessary supplies, 4. Choosing appropriate recipes, 5. Creating an optimal environment for focus groups.

Strengths

Though this study will discuss its limitations, it also has several strengths. This study is one of the few existing studies examining a cooking intervention in an adolescent population. In addition, it uses a mixed methods research approach, which increases the validity of the results by combining both qualitative and quantitative data. Also, the study was carried out in the participant's school, an environment that the participants were already familiar with, allowing them to be more comfortable with the space and more natural with the behavior that they displayed than they would be in an unfamiliar intervention site.

Limitations

One limitation of this study is the small sample size. The sample size was so small that quantitative data could not be analyzed with statistical significance. Due to unforeseen circumstances, the participants sampled were from only one school than the original planned three schools, reducing the area that the population was selected from. Also, a majority of the participants who returned youth assent and parent consent forms were mostly Caucasian, reducing the diversity of the group. The results of this study, therefore, may not be generalizable to other populations or the population at large. In addition, the format of this study's sample school's after-school program was designed so that students can choose which club they participate in week-by-week. For this reason, only some participating students attended all lessons, while others did not, so measurement of knowledge, attitudes, and behaviors may not have changed much due to participants missing lessons. If this study were to be repeated, it would be important for participants to attend as many lessons as possible to determine if the amount of lessons matters in the results.

Implications for Further Research

Since afterschool clubs are a convenient opportunity to reach middle school students, and even elementary school students, additional research is necessary determine what the threshold for behavior change is and whether nutrition interventions are effective in this setting. Since this study was small and quantitative data could be improved, a repeat of this study itself with a larger population could be an area of future research. After completing this study, areas that still need to be investigated are:

1. What type of cooking intervention is necessary to result in behavior change?
2. What methods are best at encouraging behavior change in the middle school population?
3. What is the effect of a cooking intervention that includes both middle school adolescents and their parent(s) learning to cook together?
4. Are there particular racial/ethnic groups that benefit most from a cooking intervention?
5. If knowledge is present, what other factors prevent behavior change with cooking behaviors (i.e. socioeconomic status, convenience, etc)?

Due to the promise that this study showed with some change in knowledge, and the lack of cooking skill data in adolescents in the current literature, it is important to gather further research on this topic. Both correlational and intervention studies would be beneficial in the area of cooking skills in adolescents to contribute to the understanding of childhood obesity and its prevention efforts.

References

1. Ogden C, Carroll M, Kit B, Flegal, K. Prevalence of obesity in the United States, 2009-2011. Centers for Disease Control and Prevention. January, 2012. Available at: www.cdc.gov/nchs/data/databriefs/db82.pdf. Accessed December 19, 2012.
2. Oude LH, Baur L, Jansen H, Shrewsbury VA, O'Malley C, Stolk RP, Summerbell CD. Interventions for treating obesity in children (review). *Evidenced Based Child Health*. 2009; 4: 1571-1729.
3. Adams GR, Berzsky M. *Blackwell Handbook of Adolescence*. 2006; Malden, MA: Blackwell Publishing Ltd.
4. Jensen B, Kattelman K, Ren C, Wey H. The efficacy of KidQuest: A nutrition and physical activity curriculum for 5th and 6th grade youth. *Journal of Extension*. 2009; 47(3): 1-16.
5. Rowe B. Nebraska- state nutrition, physical activity, and obesity profile. Centers for Disease Control and Prevention. September, 2012. Available at: www.cdc.gov/obesity/stateprograms/fundedstates/pdf/Nebraska-State-Profile.pdf. Accessed December 19, 2012.
6. Levi J, Segal L, Laurent R, Lang A, Rayburn J. F as in Fat Report. Robert Wood Johnson Foundation. September, 2012.
7. Fit by 2015 Community Update. *Daily Values*. June 11, 2013: 1-12.
8. 2012 May LPS Stats Summary. Partnership for a Healthy Lincoln. May, 2012. Available at: www.healthylincoln.org. Accessed December 19, 2012.

9. Steinbeck K. Childhood obesity: consequences and complications. *Clinical Obesity in Adults and Children*. 2010; 3: 392-407.
10. Boulet L. Asthma and Obesity. *Clinical and Experimental Allergy*. 2012; 43: 8-21.
11. Leading Causes of Death. Center for Disease Control and Prevention Web site.
Available at: <http://www.cdc.gov/nchs/fastats/lcod.htm>. Accessed May 23, 2013.
12. Reilly J, Kelly J. Long-term impact of overweight and obesity in childhood and adolescence on morbidity and premature mortality in adulthood. *International Journal of Obesity*. 2011; 35: 891-898.
13. Park M, Falconer C, Viner R, Kinra S. The impact of childhood obesity on morbidity and mortality in adulthood: a systematic review. *Obesity Reviews*. 2012;13: 985-1000.
14. Lumeng J, Forrest P, Appugliese D, Kaciroti N, Corwyn R, Bradley R. Weight status as a predictor of being bullied in third through sixth grades. *Pediatrics*. 2010; 125(6): 1301-1307.
15. Daniels S, Jacobson M, McCrinkdle B, Eckel R, McHugh Sanner B. American Heart Association childhood obesity research summit: executive summary. *Circulation*. 2009; 119: 2114-2123
16. Lee Y. Consequences of childhood obesity. *Annals of Academy Medicine*. 2009; 38(1): 75-81.
17. Rahman R, Cushing R, Jackson R. Contributions of built environment to childhood obesity. *Mount Sinai Journal of Medicine*. 2011; 78: 49-57.

18. Cecil-Karb R, Grogan-Kaylor A. Childhood body mass index in community context: neighborhood safety, television viewing, and growth trajectories of BMI. *Health & Social Work*. August 2009; 34(3): 169-177.
19. Puder J, Munsch S. Psychological correlates of childhood obesity. *International Journal of Obesity*. 2010; 34:37-43.
20. Healthy, Hunger-Free Kids Act of 2010 School Meals. United States Department of Agriculture Web site. Available at:
http://www.fns.usda.gov/cnd/healthierschoolday/pdf/HHFKA_080112.pdf.
Accessed May 23, 2013.
21. National Association for Sport and Physical Education & American Heart Association. *2012 Shape of the Nation Report: Status of Physical Education in the USA*. Reston, VA: American Alliance for Health, Physical Education, Recreation, and Dance; 2012.
22. Dietary Guidelines for Americans 2010. US Department of Health and Human Services Web site. Available at:
<http://www.health.gov/dietaryguidelines/dga2010/DietaryGuidelines2010.pdf>.
Accessed May 23, 2013.
23. Adolescent and School Health Nutrition Facts. Centers for Disease Control and Prevention. February 2013. Available at:
<http://www.cdc.gov/healthyyouth/nutrition/facts.htm>. Accessed May 23, 2013.

24. Reedy J, Krebs-Smith S. Dietary sources of energy, solid fats, and added sugars among children and adolescents in the United States. *Journal of the American Dietetic Association*. 2010; 110: 1477-1484.
25. Sebastian R, Goldman J, Wilkinson Enns C. Snacking Patterns of US Adolescents: What we eat in American, NHANES 2005-2006. *Food Surveys Research Group Dietary Data Brief* No. 2. September 2010. Available from: <http://ars.usda.gov/Services/docs.htm?docid=19476>.
26. Spear LP. The adolescent brain and age-related behavioral manifestations. *Neuroscience & Behavioral Reviews*. 2000; 24(4): 417-463.
27. Fryar C, Ervin R. Caloric intake from fast food among adults: United States, 2007-2010. NCHS Data Brief No. 114. February 2013. Available at: <http://www.cdc.gov/nchs/data/databriefs/db114.pdf>
28. Bowman S, Gortmaker S, Ebbeling C, Pereira M, Ludwig D. Energy intake and diet quality among children in a national household survey. *Pediatrics*. 2004; 113(1):112-118.
29. Short F. Domestic cooking skills-what are they? *Journal of the HEIA*. 2003; 10(3): 13-22.
30. Boutelle K, Fulkerson J, Neumark-Sztainer D, Story M, French S. Fast food for family meals: relationships with parent and adolescent food intake, home food availability and weight status. *Public Health Nutrition*. 2007; 10(1): 16-23.
31. Larson N, Story M, Eisenberg M, Neumark-Sztainer D. Food preparation and purchasing roles among adolescents: associations with sociodemographic

characteristics and diet quality. *Journal of the American Dietetic Association*. 2006; doi: 10.1016/j.jada.2005.10.029.

32. Hyland R, Stacy R, Adamson A, Moynihan P. Nutrition-related health promotion through an after-school project: the responses of children and their families. *Social Science & Medicine*. 2006; 62: 758-768.
33. Larson M, Perry C, Story M, Neumark-Sztainer D. Food preparation by young adults is associated with better diet quality. *Journal of the American Dietetic Association*. 2006; doi: 10.1016/j.jada.2006.09.008
34. Hartmann C, Dohle S, Siegrist M. Importance of cooking skills for balanced food choices. *Appetite*. 2013; 65: 125-131.
35. Engler-Stringer R. Food, cooking skills, and health: a literature review. *Canadian Journal Of Dietetic Practice and Research*. 2010; 71(3): 141-145.
36. Creswell JW, Plano Clark VL. *Mixed Methods Research*. Thousand Oak: Sage Publications; 2007.

Appendices

Appendix A

Lincoln Public Schools Letter of Approval

Lincoln Public Schools

949 West Bond • Box 82889 • Lincoln, NE 68501 • (402) 436-1790

RR 12-47

February 6, 2012

Wanda Koszewski, Ph.D.

wkoszewski1@unl.edu

Jean Fischer, Ph.D.

jfischer6@unl.edu

Department of Nutrition and Health Sciences

RE: Request to Conduct Research

Dear Dr. Koszewski and Dr. Fischer,

Your request to conduct a study entitled "Transdisciplinary Childhood Obesity Prevention Project" with students enrolled in an afterschool program at a Lincoln Public Schools Community Learning Center is approved. Please contact Josh Cramer, Federal Programs Supervisor, to secure his permission to proceed with the implementation of this study. Parent/guardian consent and student assent are required for this study. Please use the forms and procedures submitted with your request.

Sincerely,



Leslie E. Lukin, Ph.D.

Director of Assessment and Evaluation Services

cc: Josh Cramer, Federal Programs Supervisor
Deila Steiner, Director of Federal Programs

Title of Research: Transdisciplinary Childhood Obesity Prevention Project

Appendix B

Institutional Review Board Original Letter of Approval

April 5, 2012

Wanda Koszewski
Department of Nutrition and Health Sciences
119A LEV, UNL, 68583-0806

Jean Fischer
Department of Nutrition and Health Sciences
119B LEV, UNL, 68583-0806

IRB Number: 20120412329EP
Project ID: 12329
Project Title: Transdisciplinary Childhood Obesity Prevention Project

Dear Wanda:

This letter is to officially notify you of the approval of your project by the Institutional Review Board (IRB) for the Protection of Human Subjects. It is the Board's opinion that you have provided adequate safeguards for the rights and welfare of the participants in this study based on the information provided. Your proposal is in compliance with this institution's Federal Wide Assurance 00002258 and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46). Your project was approved as an Expedited protocol, category 7.

Date of EP Review: 04/02/2012

You are authorized to implement this study as of the Date of Final Approval: 04/05/2012. This approval is Valid Until: 04/04/2013.

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:

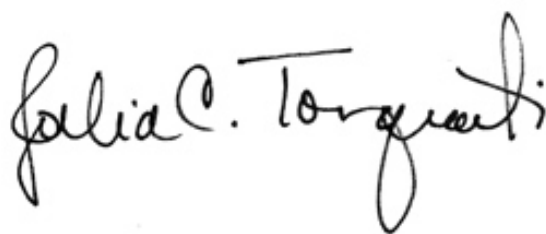
* Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;

- * Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
- * Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;
- * Any breach in confidentiality or compromise in data privacy related to the subject or others; or
- * Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

For projects which continue beyond one year from the starting date, the IRB will request continuing review and update of the research project. Your study will be due for continuing review as indicated above. The investigator must also advise the Board when this study is finished or discontinued by completing the enclosed Protocol Final Report form and returning it to the Institutional Review Board.

If you have any questions, please contact the IRB office at 472-6965.

Sincerely,



Julia Torquati, Ph.D.
Chair for the IRB



Appendix C

Institutional Review Board Approval for use of Pre- and Post- Youth Surveys

IRB Number: 20120412329EP

Project ID: 12329

Project Title: Transdisciplinary Childhood Obesity Prevention Project

Dear Wanda:

The Institutional Review Board for the Protection of Human Subjects has completed its review of the Request for Change in Protocol submitted to the IRB.

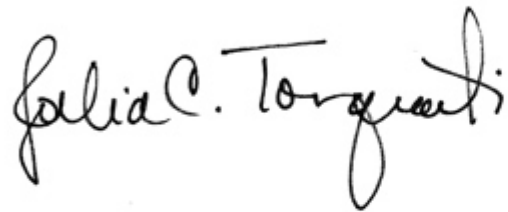
We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:

- * Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;
- * Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
- * Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;
- * Any breach in confidentiality or compromise in data privacy related to the subject or others; or
- * Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

This letter constitutes official notification of the approval of the protocol change. You are therefore authorized to implement this change accordingly.

If you have any questions, please contact the IRB office at 472-6965.

Sincerely,

A handwritten signature in black ink that reads "Julia C. Torquati". The signature is fluid and cursive, with the first name "Julia" and last name "Torquati" clearly legible, and "C." as a middle initial.

Julia Torquati, Ph.D.

Chair for the IRB



Appendix D

Institutional Review Board Approval for Modification of Consent Forms

IRB Number: 20120412329EP

Project ID: 12329

Project Title: Transdisciplinary Childhood Obesity Prevention Project

Dear Wanda:

The Institutional Review Board for the Protection of Human Subjects has completed its review of the Request for Change in Protocol submitted to the IRB.

****It has been approved to modify the information letter and consent form to remove the Kidquest lesson components for those schools only offering cooking club.****

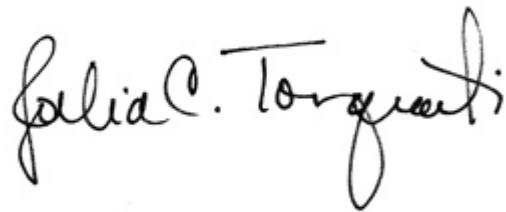
We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:

- * Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;
- * Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
- * Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;
- * Any breach in confidentiality or compromise in data privacy related to the subject or others; or
- * Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

This letter constitutes official notification of the approval of the protocol change. You are therefore authorized to implement this change accordingly.

If you have any questions, please contact the IRB office at 472-6965.

Sincerely,

A handwritten signature in black ink that reads "Julia C. Torquati". The signature is fluid and cursive, with the first name "Julia" and last name "Torquati" clearly legible, and "C." as a middle initial.

Julia Torquati, Ph.D.

Chair for the IRB



Appendix E
Youth Assent Form

YOUTH ASSENT FORM

Effectiveness of an AfterSchool Nutrition Cooking Club

This is an invitation for you to help in a study with the University of Nebraska-Lincoln. The project is called the KidQuest Cooking Club. We want to see if you will learn about cooking through the KidQuest program. If you agree to help, you will work with our team two times. Each time will about 15 minutes each. You will take a survey on cooking. Some of your cooking club sessions may be observed by research personnel.

There is no risk associated with this study. The reason why we are doing this study is that it will help us develop more affective afternoon cooking clubs. Your responses will be strictly confidential. There will be no way for us to know which responses belong to you or someone else. We may publish a summary of everybody's responses or present such a summary at a scientific meeting, but your identity and your responses would be totally confidential.

Your parents will also be asked to give their permission for you to take part in this study. Please talk this over with your parents before you decide whether or not to participate. You do not have to be in this study if you do not want to. If you decide to participate in the study, you can stop at any time. If you choose to participate we will ask you to participate in the pre and post follow-up. However, you can still participate in the club without doing the research component.

If you have any questions at any time, please ask one of the researchers.

Signature of Subject Date

Signature of Investigator Date

INVESTIGATOR

Wanda M. Koszewski, PhD, RD, LMNT

Phone: 402-472-7966

Appendix F

Instructions for Parent Consent and Club Information

Parent Permission and Club Information
Afterschool Nutrition Cooking Club

Dear Parent/Guardian:

Your child has the opportunity to participate in the KidQuest cooking club. The cooking club will occur once per week throughout the second quarter. The program focuses on improving cooking skills of youth. Enclosed is an informed consent form, giving your child permission to participate in the testing involved in the club. The consent form gives your child permission to complete a survey about their cooking knowledge before the club begins and after it is finished.

Please complete the consent form and either return it back with your child to school or using the provided postage-paid envelope, send to the address below.

Address:

Nutrition and Health Sciences
University of Nebraska-Lincoln
110 Ruth Leverton Hall
Lincoln, NE 68583-0806

Your child is not required to participate in the testing portion in order to be a part of the cooking club. Participation in the testing portion is voluntary. If you approve your child's participation in the testing portion, please return this informed consent form.

Thank you! We greatly appreciate the time you have taken to complete this consent form.

If you have any questions about the KidQuest cooking club program or the evaluation measures, please contact the project director listed below.

Wanda M. Koszewski, PhD, RD
Associate Extension Professor
119A Leverton Hall
Department of Nutrition and Health Sciences
University of Nebraska-Lincoln
Lincoln, NE 68583-0806
Telephone 402-472-7966 Fax 402-472-1587
Email: wkoszewski1@unl.edu

Appendix G

Parent Consent Form

Dear Parent/Guardian:

Your child has elected to participate in an after school cooking club. To evaluate the efficacy of this program, we will be conducting a focus group sessions and handing out pre- and post- surveys. The focus group session will be one hour in length at most and will ask students what they thought about Cooking Club and what they learned.

This letter is a consent request for your child to participate in the focus group session and surveys for this Cooking Club research project developed by the University of Nebraska-Lincoln (UNL) Nutrition Education Program. Our research and evaluation methods have been approved by the University of Nebraska-Lincoln Human Subjects Research Review Board. Your child will be asked to do the following:

- Answer questions regarding the efficacy of the program. A copy of these questions can be requested by contacting the project director listed on this consent form.

Participation in the focus group session is voluntary and you may withdraw your child at any time without penalty. Only youth in which received consent will be asked to participate in the evaluation.

The responses from the students will be recorded in writing and audio to recall accuracy of evaluation. Due to the nature of an open-discussion forum the investigators cannot guarantee participant confidentiality and that the youth participant should only discuss items that they feel comfortable discussing. Identities will not be recorded to protect the students. Result will aid in the evaluation of the program for future reference. The data (without any individual identifiers) may be submitted to professional journals and other publications and may be presented in a public setting.

If you have additional questions about the KidQuest program or the evaluation measures that will be used, please contact the project director listed below.

Wanda M. Koszewski, PhD, RD
Associate Extension Professor
119A Leverton Hall
Department of Nutrition and Health Sciences
University of Nebraska-Lincoln
Lincoln, NE 68583-0806
Telephone 402-472-7966 Fax 402-472-1587
Email: wkoszewski1@unl.edu

Appendix H

Matrix Observation Sheet

Adapted from Deepa Srivastava

Observer Weekly Record – Cooking Club, Adapted from Deepa Srivastava

1. Today's Date:	2. Program Name:	3. Site ID:	4. Observer:
------------------	------------------	-------------	--------------

Planned Lesson & Activities

5. Topic of today's cooking lesson:

6. Did the instructor complete today's topic?
☐ Yes ☐ No

7. If No to # 6, what is the observed reason? _____

8. # of recipes completed:

9. Did students' get the recipe to take home? ☐ Yes ☐ No

Opportunities for Youth Skill Building						
Instructor(s)...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Applicable
10. Communicate goals, purpose, or expectations for cooking lesson and activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Has knowledge about the topic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Has skills related to the cooking activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Involves youth in cooking activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Ask youth "why", "how", and "what if" questions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Youth...						
15. Are interested / focused	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Actively listen to a lecture/ presentation/ demonstration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Actively participate in cooking activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Ask questions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Work cooperatively with each other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Students' Assessment	Very Low	Low	Neutral	High	Very High	Not Applicable
20. Willingness of students to participate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Students' level of enjoyment for the lesson / instructions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Students' level of enjoyment for cooking activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

23. Comments/Suggestions:

Appendix I
Pre-Assessment Youth Survey

KidQuest Afterschool Cooking Club Pre-Assessment

Please circle the number that corresponds with your response.

1= Strongly Agree, 2= Agree, 3= Not sure, 4= Disagree, 5= Strongly Disagree

1	I can name common utensils used in a kitchen by looking at them (example: I can identify the name “whisk” by seeing the object).	1	2	3	4	5
2	I can identify when to use different kinds of measuring cups/spoons.	1	2	3	4	5
3	I can correctly measure the amount the recipe asks for.	1	2	3	4	5
4	I know how to perform different knife cuts, such as “chop,” “julienne,” and “dice.”	1	2	3	4	5
5	I can turn the oven to the correct temperature.	1	2	3	4	5
6	I know how to read a recipe.	1	2	3	4	5
7	I know how to follow the directions of a recipe correctly.	1	2	3	4	5
8	I know how to prepare food safely.	1	2	3	4	5
9	I go grocery shopping with my parents often.	1	2	3	4	5
10	I help my parents prepare dinner often.	1	2	3	4	5
11	I know what cooking terms mean, such as “broil,” “sauté,” and “cream.”	1	2	3	4	5

12	I enjoy cooking.	1	2	3	4	5
13	I know a lot about cooking.	1	2	3	4	5
14	Snacks/meals turn out well when I make a recipe.	1	2	3	4	5
15	When I wash my hands, I scrub them with soap for at least 20 seconds.	1	2	3	4	5
16	When I am able to complete a recipe, I feel proud of myself.	1	2	3	4	5
17	My parents are proud of my ability to cook.	1	2	3	4	5
18	It's important to know how to cook.	1	2	3	4	5
19	I like when my parent(s) let me help out in the kitchen.	1	2	3	4	5
20	I wish I knew more about cooking.	1	2	3	4	5

Appendix J

Post-Assessment Youth Survey

KidQuest Afterschool Cooking Club Post-Assessment

Please circle the number that corresponds with your response.

1= Strongly Agree, 2= Agree, 3= Not sure, 4= Disagree, 5= Strongly Disagree

1	I can name common utensils used in a kitchen by looking at them (example: I can identify the name “whisk” by seeing the object).	1	2	3	4	5
2	I can identify when to use different kinds of measuring cups/spoons.	1	2	3	4	5
3	I can correctly measure the amount the recipe asks for.	1	2	3	4	5
4	I know how to perform different knife cuts, such as “chop,” “julienne,” and “dice.”	1	2	3	4	5
5	I can turn the oven to the correct temperature.	1	2	3	4	5
6	I know how to read a recipe.	1	2	3	4	5
7	I know how to follow the directions of a recipe correctly.	1	2	3	4	5
8	I know how to prepare food safely.	1	2	3	4	5
9	I go grocery shopping with my parents often.	1	2	3	4	5
10	I help my parents prepare dinner often.	1	2	3	4	5
11	I know what cooking terms mean, such as “broil,” “sauté,” and “cream.”	1	2	3	4	5

12	I enjoy cooking.	1	2	3	4	5
13	I know a lot about cooking.	1	2	3	4	5
14	Snacks/meals turn out well when I make a recipe.	1	2	3	4	5
15	When I wash my hands, I scrub them with soap for at least 20 seconds.	1	2	3	4	5
16	When I am able to complete a recipe, I feel proud of myself.	1	2	3	4	5
17	My parents are proud of my ability to cook.	1	2	3	4	5
18	It's important to know how to cook.	1	2	3	4	5
19	I like when my parent(s) let me help out in the kitchen.	1	2	3	4	5
20	I wish I knew more about cooking.	1	2	3	4	5

Appendix K
Cooking Club Curriculum

Club #1 – Jan 7, 2013

Purpose:

1. Introduce club staff and cooking club
2. Complete youth assent and Cooking Club Youth Survey
3. Distribute parent consent and inform students to return signed consent form next week or with pre-paid envelope
4. Play a name game or have everyone go around the room and say their name/hobby????

Schedule:

3:00-3:15 -Get everyone in the classroom and sitting down. Play name game.

**3:15-3:25 - (School brings in provided snack – youth get 5 minutes to eat it and then we collect uneaten snacks; seconds are not allowed)

3:15-3:30 -Introduction [Welcome to Cooking Club. The purpose of this club is to help you learn how to cook and prepare meals. Who all has cooked before? What types of foods? What's the benefit of cooking at home? (Get to choose what's in your food, take pride in eating something that you make) Talk about how love cooking and benefits to cooking own food].
 -Go over ground rules (follow BIST rules, no cell phones, be attentive, stay in assigned kitchen, wash hands after you put your stuff down/cough/sneeze or touch your face/hair.)

3:30-3:45 -Make trail mix snack. Complete Cooking Club Youth Survey, informed, and consent/assent. Remind youth to have parents sign consent form and return next week or by pre-paid envelope.

Ground Rules:

1. Must ALWAYS wash hands before touch food.
2. Make sure to stay at your kitchen when preparing food.
3. If you need to leave (like to go to the bathroom), make sure to get a hall pass from us. We don't want student roaming the classroom.

Recipe:

Trail Mix:

Ingredients: granola, almonds, raisins, pumpkin seeds
 Combine desired ingredients and enjoy.

Club #2 – Jan 14, 2013

Purpose:

The purpose of today's club is to learn how to measure dry/liquid ingredients in cups. We will also give a 5 minute demonstration on how to safely use a knife as we will be cutting up fruit today. When preparing parfaits, we can have youth go through assembly line so they can pick what they want on their parfait.

Schedule:

- 3:00-3:15 -Get everyone in the classroom, stuff put on the floor, into assigned kitchen, and hands washed. Go through recipe for today.
- Measuring dry/liquid with cups demonstration
- Knife skill demonstration
-
- **3:15-3:25 - (School brings in provided snack – youth get 5 minutes to eat it and then we collect uneaten snacks; seconds are not allowed)
-
- 3:25-3:45 - Prepare/sample parfaits.
-
- 3:45-4:00 -Clean up

Recipe: Fruit & Yogurt Parfait

1

serving

Ingredients:

- 1 (6 oz) container or $\frac{3}{4}$ cup vanilla OR fruit flavored low-fat yogurt $\frac{1}{2}$ cup fruit (chopped or canned)
- 4 tablespoons crunchy cereal (granola or grape nuts)

Directions:

1. Alternate in a cup until full: 2 spoons fruit, 2 spoons yogurt, 1 spoon cereal, ending with cereal.

Nutrition Information per Serving: Calories: 240, Total Fat 3 g (5% DV), Saturated Fat 1.5 g (8% DV), Cholesterol 10 mg (3% DV), Sodium 300 mg (13% DV), Total Carbohydrate 42 g (14% DV), Dietary Fiber 7 g (28% DV), Sugars 17 g, Protein 11 g, Vitamin A 15%, Vitamin C 30%, Calcium 30%, Iron 45%.]

Club #3 – Jan 28, 2013

Purpose:

The purpose of today's club is to learn how to measure ingredients in teaspoons/ tablespoons. We will show them the proper way to measure liquid and solid ingredients.

Schedule:

- | | |
|-----------|---|
| 3:00-3:10 | -Get everyone in the classroom, stuff put on the floor, into assigned kitchen, and hands washed. Remind youth of rules for Cooking Club.
-Measuring teaspoon/tablespoon demonstration. Go through recipe as a group. |
| 3:15-3:45 | -Prepare recipe and clean up |
| 3:45-4:00 | - Sample recipe and have snack provided by school |

Recipe:

Peanut Butter Bites

4 servings

Ingredients:

- 1 Tablespoon peanut butter
- 1 Tablespoon quick-cooking oats
- 1 Tablespoon non-fat dry milk
- ½ Tablespoon honey
- 1 Tablespoon raisins (optional)

Directions:

1. In a small mixing bowl, combine peanut butter, non-fat dry milk, and honey.
2. Add oats a little bit at a time, mixing thoroughly.
3. Stir in raisins, if desired.
4. Make into 4 balls.
5. Wrap in wax paper and refrigerate until ready to eat.

Nutrition Information per Serving: Calories 40, Total Fat 2 g (3% DV), Saturated Fat 0 g (0% DV), Cholesterol 0 mg (0% DV), Sodium 25 mg (1% DV), Total Carbohydrate 4 g (1% DV), Dietary Fiber 0 g (0% DV), Sugars 3 g, Protein 2 g, Vitamin A 0%, Vitamin C 0%, Calcium 2%, Iron 0%

Club #4 – Feb 4, 2013

Purpose:

The purpose of today's club is to learn about knife skills. Tips when using a knife: (1) when carrying a knife, point the tip towards the floor; (2) always cut on a flat surface; (3) when cutting/chopping an item, your holding hand should be shaped like a claw – fingers tucked under in a “c” shape; (4) tip of knife should always be on cutting board when cutting; (5) don't place a knife into a sink of soapy water – don't want the dishwasher to cut themselves

Schedule:

- | | |
|-----------|--|
| 3:00-3:10 | -Get everyone in the classroom, stuff put on the floor, into assigned kitchen, and hands washed. Remind youth of Cooking Club rules.
- Knife safety lesson review (proper way to hold a knife, important to have a flat surface when cutting/chopping foods, remember not to place knife in sink filled with soapy water because can't see if and could cut yourself). Go through recipe. |
| 3:15-3:45 | - Prepare recipe and clean up |
| 3:45-4:00 | - Sample recipe and have snack provided by school |

Recipe:

Fruit Salsa with Cinnamon Crisps

8 servings

Ingredients:

1 pint fresh strawberries, chopped	1 apple, chopped
1 large banana, chopped	¼ cup orange juice
1 kiwi, peeled and chopped	1 bag cinnamon tortilla chips
½ tsp cinnamon	¼ cup sugar
¼ tsp nutmeg	

Directions:

1. Combine strawberries, banana, apple and kiwi. Mix orange juice, ¼ cup sugar, nutmeg, and ½ teaspoon cinnamon. Toss with fruit. Chill.
2. Serve fruit salsa over cinnamon chips.

Nutrition Information per Serving: Calories: 120, Total Fat 1 g (2% DV), Saturated Fat 0 g (0% DV), Cholesterol 0 mg (0% DV), Sodium 75 mg (3% DV), Total Carbohydrate 28 g (9% DV), Dietary Fiber 3 g (12% DV), Sugars 17 g, Protein 2 g, Vitamin A 2%, Vitamin C 60%, Calcium 4%, Iron 4%.

Club #5 – Feb 11, 2013

Purpose:

Today we brushed up on the knife skills and talked about food safety. Food safety items mentioned include the importance of keeping foods cold and cleaning cutting boards. One example was if you were to bring the chicken and fruit salad recipe that we will be making to a pot-luck (chicken, mayonnaise, and yogurt).

Schedule:

- | | |
|-----------|---|
| 3:00-3:15 | -Get everyone in the classroom, stuff put on the floor, into assigned kitchen, and hands washed. Touch up on knife skills |
| 3:15-3:45 | - Prepare recipe and clean up |
| 3:45-4:00 | - Sample recipe and have snack provided by school |

Recipe:

**Note: we used pre-cooked chicken to save time

Chicken & Fruit Salad

Servings: 6

Ingredients:

Dressing:

- | | |
|---|---------------------------|
| 1 Tablespoon reduced fat mayonnaise | 1 Tablespoon orange juice |
| 1/3 cup plain low-fat or non-fat yogurt | |

Salad:

- | | |
|--|---|
| 1 red apple | 1 (11 oz) can mandarin oranges, drained |
| 2 cups chicken or turkey, cooked and cubed | 1 ½ cups seedless grapes |
| ½ cup celery, chopped | Lettuce leaves (optional) |

Directions:

1. Combine mayonnaise, yogurt, and orange juice. Set aside.
2. Core and chop apple. Chop the celery and cut the grapes in half.
3. Combine apple, chicken, celery, oranges and grapes. Combine dressing and salad.
4. Serve on lettuce leaves, if desired.

Nutrition Information per Serving: Calories: 150, Total Fat 3 g (5% DV), Saturated Fat 0.5 g (3% DV), Cholesterol 40 mg (13% DV), Sodium 75mg (3% DV), Total Carbohydrate 17 g (6% DV), Dietary Fiber 2 g (8% DV), Sugars 14 g, Protein 16 g, Vitamin A 15%, Vitamin C 40%, Calcium 4%, Iron 4%.

Club #6 – Feb 18, 2013

Purpose:

The purpose of today's club is to learn how to cook on the stove-top. Who has cooked on the stove-top? What kind of foods can you cook on a stove-top? Tips:

1. One important thing to remember when cooking on a stove-top is to use the correct size of pan. What happens if you are sautéing 4 cups of vegetables with a small pan? -- they won't cook evenly.
2. You also want to make sure to use the right size burner to make sure it fits the pan you are cooking with.
3. Make sure you keep attention on what is cooking on the burner – you don't want something to boil over or start a fire.
4. It's also important to make sure you cook at the right temperature. If you are cooking chicken and you turn it on high – the middle won't get cooked.
5. Another tip is to use pot holders so you don't burn yourself.
6. And last but not least.... You want to make sure to TURN THE BURNER OFF!!!

Schedule:

- | | |
|-----------|--|
| 3:00-3:15 | -Get everyone in the classroom, stuff put on the floor, into assigned kitchen, and hands washed. Remind youth of Cooking Club rules. |
| | - Discuss tips with using a stove top. Read through recipe. |
| 3:15-3:45 | - Prepare recipe and clean up |
| 3:45-4:00 | - Sample recipe and have snack provided by school |

Recipe:

Pizza Quesadillas

9 Servings

Ingredients:

½ cup pizza sauce	1/3 cup finely chopped pepperoni
6 (7-inch) flour tortillas	3 Tablespoons sliced pitted ripe olives
2 cups (8 oz) Monterrey Jack cheese, shredded	Cooking spray

Directions:

1. Spread about 1 ½ tablespoons of pizza sauce on half of each tortilla.
2. Sprinkle Monterrey Jack cheese over pizza sauce.
3. Top with pepperoni and olives. Fold tortillas in half. Gently press down the edges.
4. Preheat a large skillet. Spray with cooking spray. Cook tortillas, 2 or 3 at a time, over medium heat for about 2 minutes per side or until cheese melts.
5. Cut each tortilla into three triangles.

Nutrition Information per Serving: Calories: 210, Total Fat 14g (22% DV), Saturated Fat 6 g (30% DV), Cholesterol 30 mg (10% DV), Sodium 560 mg (23% DV), Total Carbohydrate 13 g (4% DV), Dietary Fiber 1 g (4% DV), Sugars 1 g, Protein 9 g, Vitamin A 8%, Vitamin C 4%, Calcium 20%, Iron 6%.

Club #7 – Feb 25, 2013

Purpose:

Today we learned about baking. We talked about how you need to make sure to have the ingredients measured correctly in order for the recipe to turn out. We also told the youth that we would be doing a cooking club challenge next week, but it would be a surprise.

Schedule:

- | | |
|-----------|---|
| 3:00-3:15 | - Take students who have youth assent and parent consent forms signed out of class for focus groups. Students will return in time to sample recipe. Get remaining students seated, into kitchens, and wash hands. Talk about significance of baking. Read through recipe. |
| 3:15-3:45 | -Prepare recipe and clean up |
| 3:45-4:00 | - Sample recipe and have snack provided by school . |

Recipe:

Apple Cinnamon Muffins

12 Servings

Ingredients:

1 egg	2/3 cup milk
2 cups baking mix	2 teaspoons vegetable oil
¾ cup apples, peeled and finely chopped	2 teaspoons cinnamon
1/3 cup sugar	

Directions:

1. Preheat oven to 400°F.
2. Grease bottom of 12 muffin cups
3. Beat egg slightly, stir in remaining ingredients just till moistened.
4. Divide batter evenly among cups.
5. Bake until golden brown, 15 to 17 minutes. Remove and place on a cooling rack.

NOTE: Do not overbeat muffins. Beating too much makes a tougher muffin. You also can use muffin liners.

Nutrition Information per Serving: Calories: 120, Total Fat 3.5 g (5% DV), Saturated Fat 1 g (5% DV), Cholesterol 0 mg (0% DV), Sodium 250 mg (10% DV), Total Carbohydrate 21 g (7% DV), Dietary Fiber 1 g (4% DV), Sugars 8 g, Protein 2 g, Vitamin A 0%, Vitamin C 0%, Calcium 4%, Iron 4%.

Club #8 – March 4, 2013

Purpose:

The purpose of today's club is to test how much you have learned by competing in Iron Chef and complete Cooking Club Youth Survey.

Schedule:

3:00-3:10	-Get everyone in the classroom, complete surveys, assign recipes to four groups, start making recipe.
3:10-3:35	- Prepare recipes and clean up
3:35-3:45	- Place smoothies in cups for judging panel
3:45-4:00	-Sample food

Recipes (4 total):

Recipe # 1. Strawberry Smoothie

4 servings

Ingredients

1 cup chopped Fresh strawberries
1 cup orange juice
10 ice cubes

Directions

1. Place all ingredients in blender
2. Cover and blend for about 30 seconds, or until smooth

Recipe #2: Pineapple Banana Smoothie

4 servings

Ingredients

1 large banana cut into chunks
1 cup canned pineapple
1/3 cup pineapple juice
4 ice cubes

Directions:

1. Place all ingredients in blender
2. Cover and blend for about 30 seconds, or until smooth

Recipe #3: Blackberry/Raspberry Smoothie

4 servings

Ingredients:

2 containers (6oz) vanilla fat-free or low-fat yogurt
1 package (10oz) frozen strawberries or raspberries
1 medium banana, slices

Directions:

1. Place all ingredients in blender
2. Cover and blend for about 30 seconds, or until smooth

Appendix L

Focus Group Transcript

Elisha: My name is Elisha Hall. I am a nutrition graduate student from the University of Nebraska Lincoln. The reason we're meeting today is to talk about Cooking Club. I will be asking you questions to help us evaluate the afterschool program. There are no right or wrong answers to the questions I am about to ask. I understand that each of you will have your own opinions and will answer questions differently; but please share exactly what you think. If for some reason you do not feel comfortable answering the questions, you do not have to share. You may also discuss the questions amongst each other. I am interested in what you have to say and am here to make sure each of you has a chance to speak. If one of you is talking too much, I may ask you to give the others a chance. If you are not talking much, I may call on you as I want to make sure everyone has an opportunity to share. I will be taking notes and tape recording the session in order to help me remember what you said. No names will be recorded or used in any reports generated from this session. Please remember not to say each other's names during this time.

Elisha: Think back to when you first joined Cooking Club...what got you interested in cooking club?

Student: The food

Student: To learn how to cook and not how to burn down our home.

Laughter

Student: To cook amazing stuff

Student: Like pizza quesadillas

Student: I'm trying to get my mom to allow me to cook that again.

Elisha: Oh yeah, did you take your recipe home to show her?

Student: Yeah, she said sometime I could cook it.

Elisha: Good.

Student: Um, if my mom was like at work I might be prone to cook it for my mom.

So...my mom... if...my mom...My mom and her boyfriend.

Elisha: So, cooking for your whole family then?

Student: Yeah.

Elisha: Are there some skills that you learned during Cooking Club that you didn't know before?

Student: Yeah! Not trying to burn down the house again. *Laughter* 'Cause you don't want to burn down the house.

Student: How to use an oven.

Elisha: Okay, how to use an oven.

Student: Oh yeah...that...that...that's a good one so you know not how to burn down the house.

Student: Why would you be burning down the house?

Student: Wow.

Elisha: Okay, I think we've covered not burning down the house now.

Student: Oh, come on!

Elisha: Um, were there any new foods that you tasted that you haven't tasted before?

Student: Quesadillas.

Elisha: Ok, quesadillas, what about you?

Student: Uhm, yogurt, bananas, quesadillas, fruit salsa

Student: Not burning down the house.

A lot of interrupting going on

Elisha: Did you like the fruit salsa?

Student: Yeah.

Student: Yeah.

Student: It was weird, but it was yummy.

Student: Yeah!

Student: Yogurt parfaits

Student: Peanut butter balls

Student: The chicken salad stuff.

Student: Yeah, I wasn't here for that one.

Elisha: What did you learn during cooking club that you think was most valuable?

Student: Making the quesadillas

Student: Learning how to cook the quesadillas on the stove.

Student: We really liked them too.

Student: Cooking with the oven and the correct temperature.

Student: Measuring.

Elisha: Okay, anything else?

Elisha: Anyone else?

Elisha: Okay...

Elisha: What part of the club did you like the most?

Student: Making the quesadillas!

Student: Quesadillas

Student: Pizza quesadillas, pizza quesadillas, pizza quesadillas!

Laughter

Elisha: Okay, is there anything besides the pizza quesadillas?

Student: Pizza quesadillas!

Student: I don't know.

Student: Cooking.

Student: How not to burn the house down, how not to burn the house down.

Student: I'm not listening!

Student: I'm not doing anything!

Elisha: Okay, let's get back on track.

Student: Yogurt parfaits

Elisha: Okay, did anyone else like the yogurt parfait?

Student: Yeah!

Student: Yeah!

Student: Yeah!

Student: Yeah!

Student: Yeah!

Student: I didn't, I don't eat strawberries.

Student: The strawberries were the best part. I could eat just the strawberries.

Student: I didn't like the yogurt parfaits!

Elisha: Why was that?

Student: Because I don't like yogurt in my parfaits!

Student: I liked the parfait.

Student: Yeah.

Student: I love strawberries.

Elisha: Did you like the fruit salsa?

Student: What's that? What's that?

Elisha: That was the week we had cinnamon chips and you all made a mixture of fruit to put on top.

Student: Yeah

Student: I didn't eat it.

Student: It was the orange juice.

Student: It was the strawberries; I don't like strawberries.

Student: I love strawberries.

Student: What's wrong with strawberries?

Elisha: What part of the club did you like the least?

Student: Some of the food, like the yogurt.

silence

Elisha: Anything else you didn't like? Anything beside the food?

silence

Elisha: How do you feel about cooking now that you've experienced cooking club?

Student: I don't cook when my parents aren't home, but if I did I'm not going to burn the food because I know how to use the stove and cook now.

Student: I won't burn down the house.

Student: I won't burn down the house.

laughter

Student: You be quiet now!

Student: Stop talking about that.

Student: But I won't burn down the house.

Elisha: Anyone else? How do you feel about cooking now that you've been in cooking club?

Silence

Elisha: Do you all remember the mini lessons we had before cooking each week? What did you learn from those lessons?

Student: I learned how it's important to measure the right amount of food for a recipe. And how to cook on top of a stove or how to turn the oven to the right temperature.

Student: Or how to use a knife correctly.

Student: Yeah, how to cut and hold a knife.

Student: Measuring with cups and spoons.

Student: Using an oven.

Student: Stop banging on the microphone thing!

Student: How you have to be safe with food and clean the cutting board off.

Student: And was your hands.

.....

Elisha: What about you, is there anything new that you learned?

Student: The knife skills with cutting fruit.

Student: And not burn down the house.

Student: Not burn down the house again.

Elisha: Think back to when you first joined cooking club...has cooking at home changed since you got involved in cooking club?

Student: My mom won't let me cook.

Elisha: Did you tell your parents about what you're learning in cooking club?

Student: No

Student: No

Student: Is she worried that you'll burn down the house?

Laughter

Student: My mom cooks.

Student: I cook at home.

Elisha: What kind of meals do you or your family cook at home?

Student: I cook chicken nuggets.

Student: I cook macaroni and cheese. I always cooked before though, nothing has changed. I always cooked macaroni and cheese for my mom and brother.

Student: I'm only allowed to use the microwave, so I make stuff in there.

Student: I can make toast at home.

Student: Popcorn.

Student: I made...I made a dessert with my mom. We made it awhile ago and I've always wanted to make it again.

Elisha: Did you take home any of the recipes to show your parents about what you've been doing?

Student: Yes, I showed her the pizza quesadillas and she might let me make them.

Student: No.

Student: No, my mom won't let me cook anyway.

Student: No.

Elisha: Aside from the original forms we sent home to give your parents, did you tell your parents or siblings anything about cooking club?

Student: No.

Student: No.

Student: No.

shaking of heads from everyone else

Elisha: Do you think your parents would like to know more about what you're doing in cooking club?

Student: No, my mom doesn't care.

Elisha: Anyone else?

Silence

Elisha: Now we mentioned earlier about the foods you like, and a few of you said what you liked about the fruit salsa. What did everyone else think about that?

Student: I only ate the bananas. I didn't eat anything else.

Student: I thought it was weird.

Student: It was weird

Student: It was good.

Elisha: What did you all think about the yogurt parfait?

Student: What was that?

Elisha: That was when we had the yogurt and fruit mixed together. It was the first real lesson.

Student: Oh I wasn't here for that.

Student: I wasn't here for that.

Student: Me either.

Student: I don't remember that one.

Student: I remember that!

Student: It was kind of weird tasting, but it was okay.

Student: I liked it.

Elisha: What did you all think of the peanut butter balls?

Student: Oh those were good!

Student: I loved those!

Student: We should do them again!

Student: I liked eating those, but I didn't like how sticky they were. You had to roll them and when you went to roll them they were gross on your hands.

Student: I didn't like the raisins, it was a weird taste.

Student: They taste good.

Elisha: What did you all think of the chicken salad?

Student: Weird, weird.

Student: I don't think I was here for that one.

Student: I liked it.

Student: It was weird with the orange juice.

Student: There was orange juice in it?

Student: No, no.

Student: It would be good if it was without the mayonnaise, I didn't like that.

Student: I don't like mayonnaise.

Elisha: Now, we talked about this one too, but what did you all think of the pizza quesadillas overall?

Student: Yes!!

Student: Yes!

Student: I loved it!

Student: I want to make it again at home.

Elisha: Let's talk about each lesson before the recipes. On those pizza quesadillas the lesson was stovetop cooking. What did you learn from this?

Student: How not to burn the house down!

Student: Not burning down the house!

Laughter

Student: What burner to put what size pan on.

Student: How to cook a quesadilla on a pan.

Student: Not burning down the house.

Elisha: Ok, I think we got not burning down the house, anything else?

Silence

Elisha: For the lesson on measuring, what did you learn from this?

Student: How to measure liquids and dry stuff, and to look at the lines on the measuring cups.

Student: How to not overfill the cups or you will mess up the recipe.

Student: How to make sure you have the right amount.

Elisha: Good, anything else?

Elisha: For the lesson on knife skills when we cut the fruit, what did you learn from this?

Student: How to not cut yourself and how to cut food the right way.

Student: Yeah, how to cut.

Elisha: Anything else?

Elisha: For the lesson about being safe with food, what did you learn from this?

Student: To wash your hands. And to make sure that you clean off the cutting board and your work area and make sure everything is washed.

Elisha: What about you, did you learn anything new?

Student: No.

Elisha: Anyone else?

Elisha: Is there anything you would like to learn about cooking or food that you didn't learn during this club?

Student: Maybe more recipes.

Student: Yeah, have more food.

Student: Some cookies or some cake or something.

Student: Yeah, we should make cookies some time!

Elisha: Anything else? Any skills that you would have liked to learn?

Student: No.

Student: No.

Elisha: Okay, last one. Has anything changed in terms of you cooking, or how you cook, since you joined cooking club?

Student: No, not really.

Student: No, my mom still doesn't let me cook.

Student: No, I already knew how to cook before.

Student: No.

Elisha: Anyone else? How about you? Has anything changed for you with cooking?

Student: No.

Elisha: Those are all of my questions for today. I want to thank you all for participating in this focus group.

Appendix M
Freehand Observations

Free-hand Observations 1-07-13: Introduction and Trail Mix

- Teacher question: What kinds of food have you made before?
 - Answers: Cookies, brownies, pizza, bacon, jello, mac n' cheese
- Teachers went over expectations; very short “lesson” today due to filling out paperwork
- Teachers went over kitchen cleaning
- Participants somewhat attentive, lots of whispering to friends
- Participants more calm when given snacks
- Participants filled out surveys

Observations 1/14/13: Small and Large Measurement and Yogurt Parfaits

- Cooking groups assigned by the table participants sat at when they came into class
- At the start of Cooking Club, teachers explained what participants will be doing for that particular club while participants sat at their tables
- No lesson this week; small and large measurement lessons have been changed to be combined into one lesson next week
- New rule implemented: Students must bring food up to teachers (cups have names on them) and students must clean kitchen before they can have their food
- Recipes are handed out to each table and students are instructed to read the recipe together as a table first
 - Students not on task, talking to other tables about topics outside of cooking club; not talking about the recipe
- After a few minutes, teacher then goes over recipe as a class
 - Format is interactive-asks students to raise their hands and read the 1st direction and so on. This got more students to quiet down and be attentive.
 - Students eager to answer questions and read through recipe at this point.
- Students very slow/hesitant at getting started with recipe
- Once started, students are good at working cooperatively with each other and reading recipes together as a group
- Afterschool provider's snack interferes with cooking
 - Kids eating snack over the food they are using for recipe-unsanitary/food safety issue
 - Kids off task from recipe in order to stop and eat their snacks
- Some students using liquid cups to measure granola and some measuring is inaccurate (overfilling/under-filling); there was no lesson on measurements at the beginning of class
- Most groups very engaged and working together to complete recipe-only one group seems uninterested by standing around while one person does everything
- Knife skills not taught for safety with cutting fruit even though there is fruit to cut; this particular recipe may not be appropriate for this lesson
- Good at cooperatively cleaning
- Talkative but follow cleaning directions well
- A lot of down time between cleaning and getting to eat- could be used as a time to teach, conversations about the food, a physical activity, etc
- Reactions to parfait:
 - Only one student didn't want his parfait
 - Everyone else ate all of it
 - About 75% wanted yogurt to take home

Observations 2-04-13: Knife skills and fruit salsa

- Teachers cut up about half of the fruit ahead of time due to 45 minute limit
 - Advantage: Helps the cooking activity go more smoothly with the short time limit
 - Disadvantage: Doesn't give kids as much experience
- Kids very hard to quiet down today and get started with the lesson
 - Very rowdy and antsy
 - Could be an opportunity for a short group physical activity to get some energy out
- Teachers started out right away with knife lesson today rather than handing out recipe first
- Students invited to come up to main table to watch knife lesson
- Students very eager to watch knife lesson, very attentive during lesson
- Instructor asks students questions during lesson, keeping them engaged
- After lesson, teachers pass out recipe and go through recipe as a group, allowing students to participate
 - Each student can raise their hand and give the next step in the recipe
 - Students were very attentive
- Some difficulty forming groups when not directly assigned groups-some kids don't want to work with other kids
 - Delays getting started with activity
- Half of the groups are good at delegating tasks with each student doing on task in the recipe while the other half of the groups have most students standing around and watching as one or two people do most things
- Work appears to separate better in small groups of about three-everyone is doing something, more productivity, on task
- Students easily get off task and run around or start doing something else in larger groups (5 or 6 people)
 - Not enough different tasks in these simple recipes to allow 5 or 6 people to all participate at one time
- Students were given the opportunity to measure themselves this week, but there was a lack of enough measuring cups-students can't demonstrate correct measuring skills and one teacher suggests they get a larger cup and fill it halfway. At this point, students have still not had a proper opportunity to demonstrate the measuring skills taught.
 - Teaches and encourages students to perform inaccurate measuring
 - Measuring doesn't take long; groups could have shared measuring cups of the proper amount
 - Doesn't emphasize the importance of accurate measuring that has previously been emphasized
- About halfway through session, students are much more attentive to tasks and are all participating
- Some students expressing interest at making this at home
- Students good at working as a group to clean up this week
- "What kind of food did we make today?"
 - "Fruit and grains"
- "Do you all like the fruit we're eating today?"
 - "Yes"

- For the most part, students indicate that they like fruit salsa except some dislike the orange juice in it.

Observations 2-11-13: Food Safety and Chicken Salad

- Lesson moved around since today was supposed to be knife skills but that has already been taught...instead food safety was taught
 - In the lesson today, teachers discussed washing cutting boards between preparing meat and produce, washing hands, etc.
- Teachers prepped food before cooking club started
 - Cut meat into cubes
 - Separated produce for groups
- Students mostly got to choose their own groups today, but a few students were assigned to a group in order to even out the group numbers
- Separated into kitchens to wash hands before getting recipes
- Teachers handed out recipes, then split up and one teacher worked with one or two kitchens rather than entire classroom
 - Noise level fairly low even with more people talking at the same time
 - Students very attentive with a one teacher to about four or five students
 - Teachers reviewed recipe and where to find ingredients in these small groups
- Half of the groups were very good at sharing tasks, other half have one or two people working and everyone else is watching
- After about five minutes, students are much better at staying on task and working together
- Teachers measure out dressing for students, but students do get to measure their own produce
- Most students very apprehensive toward the look of the dressing
- Several students snacking during food prep-may need more reminders on food safety and being sanitary
- Mixing bowls chosen were too small in some groups- could be an opportunity to teach about choosing the correct supplies
- Students were good about cleaning up without being asked- getting used to routine
- Received afterschool provider chocolate milk and rice Krispy first before cooking club recipe
- Students able to take leftovers home
- About ¼ of the students threw their recipe out after one bite, saying it tasted weird
- A lot of food went to waste

Observations 2/18/13: Stovetop Cooking and Pizza Quesadillas

- Teachers started session with lesson
- For lesson, teachers had the students gather around one or two stoves while they demonstrated
- Included questions for kids “Why is there different sizes of burners?”, “Why should we not crowd the pan with too much food?”, “What size of pan would be better on this burner?”
- Also discussed the knobs on the oven, size of burner and pan, what happens if you use the wrong size burner, safety with the burners, temperature you should set different foods at, who has used the stovetop before (almost all raised their hand that they had)
 - Students were very attentive during lesson
 - Eager to answer questions and share that they had used the stovetop before
- Once lesson was over, students separated into kitchens first, teachers had kids wash hands
- Groups ranged from 3 to 6 members
- Teachers began going through the recipe aloud before handing out the recipe to the students
 - This caused confusion for several students; nothing to follow along with as the teacher read the recipe
 - Several kids asked why they hadn’t received a recipe, interrupting the recipe reading
- Recipes were still not handed out when it was time to start the cooking activity
- Once grouped into kitchens, some students were still confused on what they were making without the recipe, but this prompted them to think when the teachers asked them what goes down first on a pizza
 - Ingredients were already at each kitchen, so each group knew what ingredients were included for the recipe and had to think themselves as to what order they should put the ingredients down on the pizza tortilla
 - Students talked to each other in group and discussed what they should put down first
 - Prompted students to work very cooperatively and think for themselves
- Smaller groups of 3 and 4 had all members almost always participating-one large groups of 6 had a lot of standing around
- Teachers were more hands on this week- instead of standing in the front of the room and answering questions when asked as they usually do, they went around to every kitchen and helped by demonstrating moving food around in the pan when students were not doing it correctly, and then encouraged the students to then demonstrate what they just showed, and affirmed students when they did the skill correctly
 - Students were very attentive this way and immediately improved their skills
 - Seemed to enjoy the cooking activity more when they received affirmations on their skills
 - Students extremely engaged this week
- Recipe allowed each student to make their own pizza quesadilla on the stove top, giving everyone a chance to learn this skill
- Still a lot of eating ingredients throughout cooking
- Most kids were very good at working together in groups

- Had an extra staff member today from afterschool provider that kids were familiar with
 - Kids much better at following directions and cleaning up this week
 - Gives affirmation for kids getting cleaning done- kids seem to be much more productive with this approach than in previous weeks
- Kids eating pizzas very well, overall very well liked and accepted
 - Only one student didn't want to try it at all
- Recipes were handed out at the end of class to take home, not used at all during class- asked kids if they wanted the recipe this time and about 75% took the recipe by choice

Observations 2/25/13: Baking and Muffins

No observations recorded this week due to holding focus groups

Observations 3-04-13: Skill Demonstration

- Post-surveys filled out at the beginning of class
- Released into groups before recipes were given
- No lesson; testing skills this week
- A lot of goofing off and talking today in the older group, more focused in the younger grades
- Not a lot for kids to do today- smoothies may be too “simple”
 - Recipe done in 5-10 minutes
- Only groups with bananas had to cut fruit-recipe doesn’t give the opportunity to demonstrate skills learned throughout the course
 - Most groups only had to measure and pour ingredients into blender
 - Demonstration of only 1-2 skills at most
- A lot of talking and noise throughout the session
- Judges from the afterschool program graded taste and texture of four groups, each category on a scale of 1-5 (worst to best)
 - From there, one group “won” but received no prize
 - Judging is slightly inaccurate
 - Taste is a personal factor
 - Texture was based on a standard smoothie texture rather than preference, but the smoothies that were judged last had melted while the earlier ones were being judged, thus altering the texture from its original form
 - Recipes were not chosen by the groups, but picked by teachers and randomly assigned to groups. Recipes were not tested, so students were stuck with what they got.
- While judging, had tables discuss the top 3 things they learned in cooking club.

Answers:

 - How to wash your hands properly
 - How to use a knife
 - How to make a smoothie
 - How to use a stove
 - Stove temperature
 - Following a recipe correctly
 - Knowing the correct utensil
 - How to use proper utensils
 - How to carry utensils correctly
 - How to have the right temperature