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The Effect of Educational Shared Food Experiences on Food-related Attitudes and Behaviors

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Abstract

In the United States we lack a unifying food culture - at least one that is health promoting. Our commodified food system - one that has been built from a need to eat faster, sell more, have more choices, and be instantly gratified - often puts profits before people. Our national cuisine is highly processed, shelf stable, transportable over long distances, colorfully packaged, heavily marketed, and often flavored rather than savored. This reality has had numerous negative consequences on the health of the U.S. population. Many quantitative methods have been used to research and counteract these negative outcomes, but they've not solved the problem. This research study used qualitative, experiential education methods looking at the effects of educational shared food experiences on food related attitudes and behaviors among college students. The authors created opportunities to learn about food cultures and about locally available foods, and how these foods can be prepared in health sustaining ways. They also looked at how sharing in a connection to food and each other might influence positive behavior change among individuals. The results reveal these methods may be viable ways to develop a stronger food culture in the U.S. and help in reversing the negative health trends we see as a result of our current food system.

1. Background

Do we have a food culture to call our own? What characterizes a U.S. foodway? Perhaps, people don't have one or perhaps our commodified food system is standing in for a food culture and it's having a negative effect on the health and wellbeing of the US population. Diet-related chronic diseases, such as heart disease, cancer, stroke, Alzheimer's disease, and diabetes, are leading causes of death in the United States. Three-fourths of our healthcare dollars are spent on chronic diseases related to lifestyle[2]. And according to data from the 2012 National Health Interview Survey, approximately half (117 million) of U.S. adults are living with at least one chronic health condition[3].

Research reveals similar patterns among college students. For example, only a small percentage of college students consume the recommended five to nine servings of fruits and vegetables daily. In one study, "16% ate fruit daily and only 17% ate green salad daily"[4]. These statistics reveal a trend of eating patterns that are far from health promoting. Poor eating habits lead to high rates of illness among college students, similar to those seen for the U.S. population as a whole. In one study of 2,722 college students from age 18 to 24, 3% of females and 10% of males had already developed metabolic syndrome, a combination of conditions that increases the risk of heart disease, stroke and diabetes. In that same study, 54% of females and 77% of males exhibited at least one risk factor for metabolic syndrome[5]. Even in these academic environments where access to information is abundant, education is not solving the problem.

To make matters worse, our commodified food system is one where the focus is often on profit rather than health. Our nation's food environment is influenced by a need for instant gratification, increased sales, and more choices. Much of the food in the United States is highly processed, shelf stable, eye-catchingly packaged, and heavily marketed. Barbara Kingsolver eloquently points out the problem of this reality in her book, *Animal, Vegetable,*

Miracle, when she states, **"**A food culture is not something that gets sold to people. It arises out of a place, a soil, a climate, a history, a temperament, a collective sense of belonging[6]."

Nourishment is a universal need. Whatever your place, your culture, your history, your age, food is central to daily life. Evidence of our collective disconnection from the source and meaning of food is all around us, from the neighbor who returns the front yard grown green beans you gave him, because he doesn't know how to cook them to the child who cannot name a carrot unless it is in the shape of a tootsie roll. More evidence of our collective disconnection is seen in the college student who is appalled to learn that the ground beef purchased in a plastic wrapped Styrofoam package was formerly the muscle of a cow to the millions of us who eat low nutrient density food to fill an emotional need or who have forgotten that food chosen with care is a source nourishment and support for body, mind and spirit.

Much of the research done on the improvement of eating habits hasn't done enough to move us in a direction of reconnecting people with their food. As Michael Owen Jones states, "the typical nutrition research is experimental or quantitative; little involves qualitative, ethnographic techniques . . . rarely do researchers take into account the way that food is prepared, the context of eating, or the associations attributed to food, people, and events[7]." Our study uses qualitative data from shared food experiences to try and unveil how we might move closer to a food culture like that which Barbara Kingsolver describes, and help reconnect young adults with their food. A person, a family, or a community's relationship to the food system matters to the sustainability of health, the environment, and to society.

Studies investigating how experiential food education can be used to change young adults' dietary behavior reveal there is much work to be done on this issue. In one study focusing on the eating patterns of 1,710 young adults ages 18 to 23 and their relation to food preparation, researchers found 56% of male participants and 44% of female participants engaged in food preparation less than once per week. The study noted that young adults who had engaged in food preparation at least once a week consumed fast food less often, thus revealing a positive correlation with preparing one's own food and a more healthful dietary pattern. Higher fruit and vegetable consumption was also noted among more frequent food preparers. The authors noted that "31% of those who reported high preparation were consuming five servings of fruits or vegetables daily, compared with only 3% of those who reported very low involvement." In general, young adults that participated in more frequent food preparation better met the recommended guidelines for a healthy diet[8].

These results point to the importance of food preparation by young adults to healthy behaviors; however, most studies do not include opportunities for students to learn how to cook through hands on experiential food education. Through nutrition education on college campuses students are taught how to eat more healthfully, but not how to prepare or cook those healthier menus. One food education study involved implementing nutrition education modules in a college's orientation course for new students. They tested five different components of food education and measured what students felt were the effective and ineffective components of the curriculum. For example, a component of the curriculum students found most helpful was handling food models when learning about serving sizes[9].

Another study addressed the effectiveness of a web-based nutrition education curriculum utilizing a nutrition jeopardy game for college freshmen. Students (n = 23) were given a pretest and posttest questionnaire and researchers measured students' nutrition knowledge and capabilities before and after the intervention. This study didn't see significant changes in students' nutrition knowledge or capabilities[10]. However, studies on interactive nutrition education interventions such as these are useful for learning what methods are more or less effective for teaching young adults how to nourish themselves and to increase awareness of their food purchasing and consumption habits.

Though no doubt undertaken with good intent, there is something missing from these quantitative information-only based approaches. More research is needed on the impact of getting people to engage with real food, to have actual experiences preparing and/or tasting it. Qualitative approaches are needed to help us understand how to navigate educating people about such a personally and culturally relevant subject as food.

An approach where nutrition is taught through methods with cultural and social components and offers opportunities to engage in cooking and tasting health-promoting foods may provide more useful outcomes. In an elegant experiment designed in response to the oft heard criticism by parents, teachers, and school food service

personnel that "children will not eat healthy food," Dr. Antonia Demas highlighted the importance of shared hands-on learning experiences when it comes to food choices. In her curriculum, *Food is Elementary*, she created lessons that incorporated learning about food ingredients, culture, basic skills, and cooking into the classroom. Imagine for a moment a lesson about Greece in which children listen to music from Greece, learn simple dance steps from this tradition, see photos of traditional Greek outfits, taste several different varieties of olives, tahini, honey, and parsley. And then they make eggplant salad served with pita bread and a traditional dessert of sliced apples dressed with honey and cinnamon right in the classroom together. After tasting the dishes they have prepared together they write about them in their journals and copy down the recipes[11].

Using this culturally-based experiential approach, Demas learned not only that children will taste and enjoy healthy foods, but if they have had a shared hands-on learning experience with these foods that they will choose them in the school lunch line and eat them 7 to 10 times more often than students who had not had the hands on learning experiences[12]. In much the same way that school gardens are being used to connect children to the source of their food and to the natural world, learning to prepare food then tasting and sharing it allows for a level of "knowing" that a book cannot provide. The same strategy is important for adults - young and older alike.

In the current report, the authors investigate the use of these shared food education experiences with socio-cultural elements with college students. The purpose of this study was to try to better understand the effects of various types of food education experiences on participants' food-related knowledge, attitudes, and behaviors. In particular, the authors were interested in whether these activities were useful in cultivating a sense of food culture or community around food and changing shopping, cooking, or eating behaviors to support health.

2. Methods

In this study, written reflection assignments focused on participation in a particular experiential education class or event (with common questions) were collected from students in 12 different class sections in spring and fall of 2014. The student reflections came from an array of disciplines: HUM 124 The Ancient World (2 sections; n = 32), CLAS 450 Greek Tragedy (1 section; n = 7), MATH 303 History of Mathematics (1 section; n = 22), BIOL 110 Plants and Humans (1 section; n =16), HWP 455 Pathophysiology of Chronic Disease (1 section; n = 22), HWP 373 Foodways of the Mediterranean (1 section; n = 11), MLA Seminar (1 section; n = 4), HWP 225 Human Nutrition (3 sections; n = 89), and HWP 333 Food Politics and Nutrition Policy (1 section; n = 22).

Students in these classes were invited to participate in the study because they were required to host or attend some form of shared food education experience. Specifically, some students were required to attend the Festival of Dionysus in the Mountain South which offered a shared feast (total number of attendees > 300 people; n = 50 reflection papers where students reported tasting food), students in 3 sections of a nutrition class who participated in one or more 2-hour cooking classes (n = 64), and students in Food Politics and Nutrition Policy who hosted or taught cooking classes (n=7).

2.1 The Shared Food Experiences

2.1.1 Festival of Dionysus in the Mountain South

Every spring in ancient Athens, the god Dionysus was worshipped with a theatrical festival lasting several days, at which tragedy, comedy and other literary genres were presented to the people of Athens. Every spring in Appalachia, the end of the winter is celebrated with Ramps Festivals signaling the start of the growing season and celebrating the local delicacies. Where there are Dionysian and Ramps festivals, there is food to share.

In Spring 2014, 7 faculty members and more than 60 students teamed up to provide the UNC Asheville community with an opportunity to learn about ancient Greek and traditional Southern Appalachian traditions. Festival goers had the opportunity to explore connections between the ancient Greek and traditional Southern Appalachian practices of theater, music, science, and health as well as the foodways and healing properties of plants from both traditions. Classics and Drama students presented an original translation of Sophocles' *Philoctetes.* An ancient Greek and Southern Appalachian feast was prepared and offered using recipes researched by Foodways of the Mediterranean students and in some cases adapted for modern palates or to be in keeping with the theme of rejuvenation and health. Attendees had the opportunity to learn about ancient and traditional science and healing

practices from Math, Biology, and Health and Wellness students. The festival meal was attended by 300+ individuals some of whom had attended the performance of *Philoctetes*, the torch race or one or more of the presentations or demonstrations.

2.1.2 Topical Cooking Classes in the Context of a Course

In Fall 2014 (October/November), students in an introductory nutrition course were required to attend either a cooking class or a community garden workday. The cooking classes were taught by the instructor or other students in the health and wellness promotion degree program who had culinary skills. Two sessions of the following topics were offered for 6 to 14 students at a time: Keeping the Harvest, Cooking Healthy Comfort Food, Allergy-Free Cooking, Middle Eastern Cooking, and Cooking on a Budget. The total number of students who participated in these classes and submitted a written reflection was 64.

Students in Food Politics or Nutrition Policy were given the opportunity to plan and deliver a cooking class for their peers in teams (see above) or participate in 10 hours of service learning in a community garden. Only the reflections of students who led cooking classes were included in the analysis (n = 7).

The reflection assignments asked students to describe which activities they participated in and what their roles were with the class or event. All of the reflection assignments asked students "What, if anything, surprised or impressed you about the cooking class/event you participated in?" and to "Describe something you learned or a moment, experience, or conversation that helped you think about food or cooking differently." In addition, they all contained a question regarding their likelihood of making a change in their behavior. For example, the reflection for the cooking classes asked "Are you likely to make changes to your thinking about food, food purchasing decisions, cooking strategies, or eating patterns based on your experience with this cooking class? Please explain or give an example. The Festival of Dionysus reflections also asked the students to reflect on "One thing you'll remember about the history/traditional/cultural (Appalachian/Ancient Greek) contexts of theater, literature, foodways, medicine, science or plants. Explain why you think it is memorable."

3. Data Analysis

Between The Festival of Dionysus in the Mountain South reflections and the Topical Cooking Class reflections from the Food Politics and Nutrition Policy and Nutrition and Lifestyle courses, a total of 147 papers were analyzed. Major themes were pulled from each reflection paper and entered into a spreadsheet. The themes were recorded as umbrella terms describing something the student experienced, witnessed or learned and are outlined in the following chart:

Theme Codes	
Sharing	The participant was impacted by gathering and sharing a food experience with others, i.e. the community.
History	History of food impacted the participant's experience.
Senses	Seeing, smelling, tasting and working and interacting with food had a significant impact on the participant.
Culture	Learning of food in a cultural context (ancient, foreign, domestic) impacted the participant.
Health	Health effects and medicinal uses of food impacted the participant.
Logistics	The logistics of the event (setup, organization, schedule, sound, smell and taste of food, etc.) or class (schedule, project, assignment, work sites, etc.) had a positive, neutral or negative (+/=/-) impact on the participant's experience.
Access	Implicit and explicit messages pertaining to food access had an impact on the participant.
Change	The participant is likely to make changes to their thinking about food or food traditions, food purchasing decisions, cooking strategies, or eating patterns based on their experience.
Local	The participant conveyed interest in local food systems and topics.
Learning	The participant expresses a specific learning outcome or realization of something they weren't aware of prior to the class and class activities.

All implicit and explicit occurrences of these themes were recorded along with any relevant, helpful quotes. The quotes were recorded on the basis that they might be helpful conveying the importance of an aspect of a student's experience, as written by the students themselves. The quotes were also collected to back up any common patterns that were revealed in the data analysis.

The papers were organized according to which class the student was in and were then separated into two larger groups: those written by students participating in The Festival of Dionysus in the Mountain South and those in the Topical Cooking Classes. The data was separated this way to isolate for any differences in the effectiveness of either method of experiential food education. The two sets of data were combined in a separate analysis to reveal their collective impact.

The final component of our data analysis was focused on students' papers that denoted a willingness to make some sort of change relevant to course content. For each reflection indicating a change, the type of change was noted (cooking, purchasing, eating and other) and these were analyzed for the specific experiences that inspired those changes.

4. Results

A key goal for the Festival of Dionysus in the Mountain South was to offer festival goers an opportunity to have a historically and culturally embedded shared food experience. The experiential food education assignments were designed to encourage students to positively change their food perception, consumption and purchasing habits. How change was recorded in the analysis differed depending on which event or class the student participated in. The results of our data analysis are discussed in the following two groups of reflection papers: The Festival of Dionysus in the Mountain South and Topical Cooking Classes in the Context of a Course. But first, an overview of the key themes (which combines all 147 papers from both sections) can be viewed in Table 1.

Table 1. key themes from student reflections from shared food experiences

Theme (example quote)	#Papers	Percent
Total	147	100%
Change "This class not only encouraged me to buy healthier food options, but to cook more in general." (FED-39)	95	65
Senses "I liked being actively involved rather than just watching someone else cook. It was fun to learn how to cook healthy food in an easy way." (FED-20)	84	57
Health "A common misconception of mine was that when cooking Vegan, one had to "take away" delicious components of the meal, i.e butter, dairy, meat, etc. When in fact, it allows you to be creative and often end up adding delicious ingredients instead." (FP-3)	52	35
Learning "I was surprised to learn just how easy it was to cook food that was fast and nutritious." (FED-7)	51	35
Sharing "I learned that cooking can be fun when you share it with other people." (FED-22)	37	25

Local "Even though I am a huge supporter of locally grown food I had no idea that all meat processing and butchering took place several hours away from Asheville. This made me question what the definition of "local" really is, and whether or not there is a set standard for this." (FP-2)	22	15
Culture "I also have more consideration for my families [*sic*] cooking traditions and patterns of health. When we worked on the Family tradition recipe assignment, I was able to examine food choices and patterns related to health in my family recipes. This will influence my choices in the future and inspired me to make healthier contributions to family events involving food." (F-8)	20	14
Access "Southern Appalachia is especially known for their farmers markets, which are still essential to small, rural communities." (F-4)	11	8
History "Greeks were the first to think seriously about the importance of cookery as one of the skills or arts of human life. I think that it is something to remember when working in the kitchen. We have taken ancient Greek ideas and incorporated it into our kitchens today. Not being bound by a recipe has led us to new inventions and success." (F-3)	9	6

The most commonly cited themes were change (64.6%), senses (57%), health (35.3%), and learning (34.7%). A majority of students stated a willingness to make changes to their perception, consumption and purchasing of food that are supportive of health and are relevant to course content. In a second round of analysis, the author's categorized changes students denoted they'd make; for example, some students stated they'd make changes to their eating habits and some stated they'd make changes to purchasing, cooking *and* eating habits. (Table 2) In the reflection papers where students denoted a willingness to change, the data were reviewed to determine what specific reasons, or themes, they mentioned had motivated them to make said change. (See Table 3).

Table 2.types of change reported in student reflection assignments (percentages are rounded)

Type of Change	# Students	100%
Eating	67	46
Cooking	63	43
Purchasing	37	25
Gardening	7	0
Perception of food	3	0
Incorporate socializing	1	0
Decrease waste	1	0
Interest in health field	1	0

A change in eating, or food consumption habits was cited by 46% (67 out of 147) of students participants. Coming in close behind at 43% (63 out of 147), was the amount of students that stated the changes they would make would be to their cooking habits. The third most likely change was in food purchasing habits at 25% (37 out of 147).

Table 3. themes that inspired change in food related habits

Specific themes that inspired Change	# of papers
Increased awareness of food consumed and purchased	23
Cooking/preparing healthy food is easier than thought	19
Foods' impact on health/learned healthier alternatives	17
Open to new things/get out of comfort zone	13
Increased value of food (change in perspective)	12
Realization that it's cheaper and healthier to cook one's own food	9
Felt a sense of community/sharing of experience/etc.	8
Realization of impact of food on environment/sustainability/etc.	5
Preparing/Tasting food inspired appreciation of food/food system	4

The most frequently reported themes, or reasons, why students were inspired to make a change (shown in Table 3) were: 1) a greater awareness of the food consumed or purchased, 2) a realization that cooking and preparing healthful food is easier and more economical than previously thought, and 3) learning about the impact of food on health, while learning healthier alternatives.

4.1 The Festival of Dionysus in the Mountain South

The first thing recorded when reviewing the reflections from the Festival of Dionysus in the Mountain South was the parts of the event student participated in. Then type of student participation was reviewed for the number of students denoting they had or planned to make a change in a food-related behavior (Table 4).

Table 4. type of participation in the Festival of Dionysus

Participation	# of Participants	# stating they'd make a change	% stating they'd make a change
Prepared Feast	9	9	100
Taste (tasted food)	50	25	50
Poster (presented a display poster)	54	26	48
Other	8	3	38
Play (part of the stage play)	14	4	29

Most notable was the rate of students in the Prepared Feast category stating they'd make a change. 100% of students who helped prepare the feast served at the festival, cooking and working hands on with food, denoted in their reflection papers that they had made or planned to make a change to their food perception, consumption and/or purchasing habits. A high rate of students, 50%, that tasted food denoted a willingness to make a change to their food habits. A similarly high rate of students, 48.1%, who presented posters stated they would make a change.

Table 5 reports the number of papers addressing each theme and the number and percentage of papers indicating a willingness to make a change by theme.

Table 5. themes and willingness to change food-related behavior by theme from Festival of Dionysus reflection assignments

Themes	Papers addressing the theme (n =73)	Papers (noting willingness to change food-related behavior (n = 31)	Percentage of individuals willing to change by theme
Health	17	12	39
Culture	15	11	35
Senses	15	8	26
Sharing	10	8	26
Access	9	8	26
History	9	7	23
Local	8	7	23

As shown in Table 5, festival participants who addressed cultural and/or health themes in their reflections were more likely to be willing to change food related behaviors than those who addressed shared experiences, historical, sensory, food access and local food themes. Students' experiences of the logistics of the event were varied and included ideas for improvement of the event for future years (data not shown).

4.2 Topical Cooking Classes in the Context of a Food-Related Course

The Food Politics and Nutrition Policy and Nutrition and Lifestyle food experiences all involved students cooking, tasting, interacting with and working with food (senses theme). As part of these classes, students were required to participate in a Food Education Experience, where they worked hands-on with food by cooking or gardening (however, the gardening reflection papers were not included in the data analysis for this research project). This is different from the Festival of Dionysus in the Mountain South reflection papers, where only a small portion of students were involved in tangible experiences with food.

Of the students who participated in a Food Education Experience, a remarkable 87.6% (64 papers out of the 73) stated they were thinking of making a change or already had made a change in their food purchasing and consumption habits. Twelve percent of students (9 out of 73) stated they'd make no changes. Of these, 2 out of 9 stated their food habits were already optimal; the other 7 out of 9 did not state why they would not be making a change.

Table 6. themes and willingness to change food-related behavior by theme from cooking class reflection assignments

Theme	Papers addressing the theme (n =73)	Papers by theme denoting willingness to change (n= 64)	% of the 64 students by theme that changed or were willing to change a food-related behavior
Senses	69	62	97%
Learning	51	46	72%
Health	41	38	59%
Sharing	27	23	36%
Local	14	11	17%

Culture	5	4	6%
Access	2	2	3%
History	0	0	----

As shown in Table 6, the most common themes within papers in which students stated they'd make a change are senses, learning, health and sharing. The themes with the highest theme to change ratio (how many papers with each theme that denoted a willingness to change) are sharing (36%), health (59%). learning (72%) and senses (97%).

The data reveal students that had a tangible experience either cooking or preparing food (Senses theme) were willing to change at a rate of 97%. Those who had experienced a profound and/or surprising learning experience (Learning theme) within their assignment with food were willing to change at a rate of 72%. And students that reflected on learning about health aspects of food were willing to change at a rate of 59%. Students that felt a sense of community and camaraderie with fellow students/instructors were willing to change at a rate of 36%.

5. Discussion

Students reported finding meaning in food education experiences when they were linked to practical learning about food or health, culture, sharing food preparation or eating with others and those that included sensory food experiences. The purpose of this study was to also give students a deeper sense of the value of food, where it comes from and how it affects their lives. Because there was a positive correlation between students learning about the stories behind the food on their plate, we can see that teaching students about the food system and its cultural implications may add to the effectiveness of food education.

The data collected from participants and attendees of *The Festival of Dionysus in the Mountain South* revealed a strong relationship between working hands-on with food and making positive changes in food habits. In this intentionally historically and culturally situated shared food event, student reflections commented most often on their tangible experiences with food, cultural aspects of food and the health benefits of food. Those discussing the importance of local food, a shared or collective experience, historical connections, and the connections between food or plants and health were the most likely to report making a food-related behavior change. Students who reported on Culture and Health themes reported the strongest willingness to change among students that attended this event. From this we might conclude that, when attending events such as the Festival of Dionysus, being exposed to the cultural aspects of food and being provided information on the health benefits of food most strongly motivates students to make a change.

Four key components in the experiential food education assignments in *Topical Cooking Classes in the Context of a Course* led to an observed willingness to change among students. Those were teaching students things they may not know otherwise, providing a sense of community and teamwork, providing tangible experiences with food and teaching the health aspects of food. Combining and emphasizing these four components may be the most effective way to positively affect students' perception of food and their food consumption and purchasing habits.

Notable among the outcomes of these assignments (in the context of this study and its intentions) was the surprised reactions to skills being learned, the social aspects of the experiences and the effectiveness of working hands-on with food. One student's quote, "I was surprised at how simple many of these dishes were to make, like most people, I assumed that making these dishes would be so difficult, but it really was simple," reflects 51 of the 73 reflection papers written for the cooking class assignments (FED47). The belief that preparing food takes too much time or is too difficult and inaccessible to the average person was a commonly shared one among the students. Not surprisingly, the outcomes of the cooking assignments revealed that simply being shown how to prepare food helped debunk that belief.

The social aspect of preparing food together also resonated with students. 23 of the 64 students who stated they'd make a change in this group cited the social experience as an influence for their decision. One student stated the following:

> One thing that struck me was the social aspect of cooking with a group. It was nice to cook my own food, but it was fun doing it with a group. We were able to joke and goof off and actually enjoy the process of making food. I think that if more families cooked together in America that we could build better habits of eating than the norm. (FED21)

These outcomes help reinforce an idea this study sought to confirm, that getting individuals together to prepare a meal has a positive effect on their interactions and experiences with food. And these experiences will hopefully instill a deeper connection to food and lead individuals to developing more healthful food habits.

Overall, working hands-on with food was the greatest instigator of change. 62 of the 64 students in this group stating they'd make a change cited that working hands-on with food, preparing, cooking and/or tasting it, inspired the decision. And among the Festival of Dionysus participants those who cooked the meal all indicated strongly that they had and would be changing their food related behaviors. From this we see across the board students motivated to change their food related behaviors because of cooking experiences. One student said the following of their experience:

> The class made me want to make a lot of changes in my eating habits. Rather than eating out on a regular basis, I realize now that I can cook healthy and delicious food at home while saving money at the same time. In the future I'll be more likely to buy more groceries to prepare at home instead of going out so much. (FED20).

This is a main highlight of the study because it reaffirms what research has already shown[8] and extends it to college students participating in a single 1.5 hour cooking class; that getting young adults in the kitchen cooking or at the table tasting foods together is a highly effective method for motivating them to choose healthier food-related behaviors.

The strengths of this study included the large amount of qualitative data collected. A total of 147 reflection papers were analyzed for the study from 12 different class sections. These reflection papers provided insight to the experiences of students during and as a result of the food education assignments. The large sample size also reinforces the external validity of the results, raising the probability that they may generalize to a larger population. The main weakness of this study was the lack of a control group. It is our recommendation that similar studies moving forward use a control group to reinforce their results.

The study revealed students were most apt to modify their food perception and purchasing and consumption habits when certain themes were incorporated in the educational assignment. These themes included but were not limited to having a social environment while preparing or learning about food, working hands-on with or tasting food, learning something surprising about food and food preparation and learning the cultural significance of food and foodways. The design and execution of the class assignments used in this study can serve as models for creating other classes and educational events, particularly when educating individuals about food and nutrition. And other researchers and educators can replicate these methods in their studies and curricula and continue to test their effectiveness. Studies that incorporate the themes present here would continue to reinforce their effectiveness in experiential food education.

Our findings corroborate with the work of others, that culturally and socially embedded food education experiences are likely to be highly effective. Michael Owen Jones writes:

> To make nutrition education optimally effective, the methods should strive to be more holistic. Research shows the outcomes of a food education culture focused on mere consumption of nutrients and particular foods or food groups, and these outcomes are usually suboptimal. A method of nutrition education that might salvage it from this current reality is teaching nutrition through methods that implement cultural and social components, as well as teaching people how to cook and prepare health-promoting foods[7].

However, future research should implement an approach that uses quantitative assessment in addition to the reflection assignments. Doing so can increase the level of internal validity in studies using these methods and further solidify their place in future education settings. Researchers might do this by collecting data from their sample before and after the interventions, then follow up with participants that made changes at least several months post study to confirm those changes were sustained long-term.

6. Conclusion

The purpose of this study was to try to better understand the effects of various types of food education experiences on participants' food-related knowledge, attitudes, and behaviors. In particular, the authors were interested in whether these activities were useful in cultivating a sense of food culture or community around food and changing shopping, cooking, or eating behaviors to support health. The results revealed a strong relationship between the experimental education methods used and students making positive changes to food-related behaviors. Additional research to better understand the effectiveness on these types of educational efforts is warranted.

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