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THE FEASIBILITY OF IMPLEMENTING A FARM-TO-COLLEGE PROGRAM AT THE UNIVERSITY OF CINCINNATI

A Thesis Submitted to the
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by
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Some of the major issues confronting environmental planners today are affected by the modern system of food production, distribution, and consumption. The major contributing factor to this relationship is movement away from traditional food systems. When civilizations first began, fresh produce traveled a short distance from the field to the kitchen table; today it travels an average of 1,300 miles. Increases in technology have lead to an increase in production and distribution. Unfortunately, this unprecedented yield increase has resulted in myriad ecological and socio-economic consequences.

Fortunately, a paradigm shift is beginning to occur in agriculture. This paradigm shift is focused on concepts of sustainability instead of increases in production. One initiative to promote sustainability is the farm-to-college program. This program encourages campus cafeterias or other food service operations to purchase local farm products instead of buying from nationwide food service vendors. This program can benefit universities, students, farmers, and the environment.

The intent of this thesis was to initiate a sustainable food system on campus. As such, it sought to determine the feasibility of implementing a farm-to-college program at the University of Cincinnati’s main campus dining facilities. The results of the study showed that the current food service operation and logistical structure could support a farm-to-college program as long as the contracted food service company could find a local food distributor that offers competitive prices, meets food safety regulations, supply the high quantity of product demand, and provide reliable delivery of goods. The UC food service department administration and students were interested and supportive of having more locally grown produce incorporated into the campus dining halls. The thesis
concludes that it is feasible to implement a farm-to-college program at the University of Cincinnati’s main campus dining facilities.

The final section of this thesis provides additional information about how to continue the feasibility study with regard to the off-campus areas of focus. This additional research, with the information presented in this thesis, could be used to the implement a farm-to-college program at UC.
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CHAPTER 1

INTRODUCTION

Some of the major issues concerning environmental planning today are sprawl, watershed destruction, water and air quality/pollution, waste, depletion of natural resources, energy consumption, and loss of biodiversity. All these issues are impacted by the modern system of food production, distribution, and consumption. The major contributing factor to this problem is movement away from traditional food systems.

When civilizations first began, they developed in areas conducive to food production. Due to primitive farming equipment and knowledge, many farmers and laborers, living in close proximity to their fields, were needed to supply a small community with a sufficient amount of food. With the rise of technology and innovative agriculture methods, production rates rapidly increased, leading to a new paradigm - less labor = greater surplus. Overtime, the advancement of technology globalized the food distribution system. Fresh produce, which once traveled from the backyard/field to the kitchen table, now travels thousands of miles before it reaches the table.

In 2003 US farmers accounted for less than 1% of the population. Despite this small percentage, American farmers are capable of feeding the nations population as well as exporting millions of dollars in agricultural goods to people in other countries (Heller & Keoleian, 2003). Unfortunately, this unprecedented yield increase was not achieved without negative ecological and socio-economic consequences. As a result, the US food system, from field to table, is in need of a change (Heller & Keoleian, 2003). A paradigm shift is occurring in agriculture; one that emphasizes concepts of sustainability instead of increases in production.
A sustainable system is one that can be maintained at a particular state or quality over a long-term time period (Heller & Keoleian, 2003). Those who support and promote concepts of sustainability believe it should incorporate economic, social, and environmental dimensions. A sustainable food system must address production and consumption impacts and demands; thus, improving the sustainability of this system requires a good understanding of the relationships between food consumption behaviors, processing and distribution activities, and agricultural production practices.

As a result of the problems and concerns described above, there is a need for alternative and more sustainable food systems. Examples of food system initiatives that fit within the idea of community or local interest include direct marketing of local farm products to consumers via farmers markets, community/urban gardens, community-supported agriculture (CSA) programs, and farm-to-cafeteria programs (Murray, 2005).

One type of farm-to-cafeteria program is a farm-to-college program in which the campus cafeterias or other campus food service operations purchase products from local farmers instead of buying from nationwide food service vendors. In attempt to promote an alternative food system, this thesis was conducted to initiate a feasibility study of a farm-to-college program at the University of Cincinnati.

The general implementation requirements of a farm-to-college program can be divided into on-campus and off-campus areas of focus. On-campus areas of focus include the dining service operation, administration, and students. The off-campus areas of focus include suppliers of local food products, such as food distributing companies and local farmers. This thesis feasibility study was concerned with the latter of these two areas of focus. Specifically, the purpose of this thesis was to determine the feasibility of
implementing a farm-to-college program with regard to the on-campus areas of focus at the University of Cincinnati’s main campus dining facilities.

Answering this primary thesis question depended on whether or not the current UC food service operation would be able to support a farm-to-college program, and, if the administration and students would be interested/supportive of the program. To find this information, the following three sub-questions were asked.

1. Can a farm-to-college program be incorporated into the current UC food service operation and logistical structure?

2. Are the UC food service and campus administration interested/supportive of having more locally grown produce incorporated into the campus dining halls?

3. Are UC students interested/supportive of having more locally grown produce incorporated into the campus dining halls?

The three methods of data collection used to obtain information needed to answer these sub-questions included surveys, interviews, and internet searches. All of the information was analyzed and combined to provide an answer to the primary thesis question. Additional information collected in this study was also used to provide recommendations of how to determine the feasibility of implementing a farm-to-college program, with regard to the off-campus areas of focus.

The thesis has been divided into five chapters. The second chapter is a review of literature pertaining to the food system cycle, the history of farm-to-college programs, the definition of “local,” the implementation of farm-to-college programs, farm-to-school feasibility studies, and farm-to-college programs in the Ohio, Kentucky, Indiana (OKI) Region. The third chapter describes the methodology of the study including the research design and methods of data collection, analysis and reporting. The fourth chapter
Introduction

provides a discussion of the results. The fifth chapter draws conclusion from the entire thesis and provides additional comments and recommendations.
CHAPTER 2
REVIEW OF LITERATURE

Food Systems

When civilizations first began, they developed in areas conducive to food production. Fresh produce that once traveled a short distance, from the back yard/field to the kitchen table, now travels thousands of miles before it reaches the table. In 2003 US farmers accounted for less than 1% of the population yet they are able to sufficiently feed the nations population as well as export millions of dollars in agricultural goods to people in other countries. Unfortunately, this unprecedented yield was not achieved without negative ecological and socio-economic consequences (Heller & Keoleian, 2003).

As a result, the US food system, from field to table, is in need of a change (Heller & Keoleian, 2003). We are beginning to witness a paradigm shift in agriculture from an emphasis on production gains to an emphasis on concepts of sustainability. According to the US Farm Bill, sustainable agriculture means, “an integrated system of plant and animal production practices having a site-specific application that will over the long term: satisfy human food and fiber needs; enhance environmental quality and the natural resource base upon which the agricultural economy depends; make the most efficient use of nonrenewable resources and on-farm resources and integrate; where appropriate natural biological cycles and controls; sustain the economic viability of farm operations; and enhance the quality of life for farmer and society as a whole” (USDA, National Agricultural Library, 2007, p. 1). Others who support and promote concepts of sustainability believe it should incorporate economic, social, and environmental dimensions (Heller & Keoleian, 2003). A sustainable food system must address
production and consumption impacts and demands; thus, improving the sustainability of this system requires a good understanding of the relationships between food consumption behaviors, processing and distribution activities, and agricultural production practices.

**Food System Life Cycle**

A life cycle assessment (LCA) is an “analytical method used to evaluate the resource consumption and environmental burdens associated with a product, process, or activity” (Heller & Keoleian, 2003, p. 1009). There are five stages of the food system life cycle: origin of (genetic) resource; agricultural growing and production; food processing, packaging and distribution; preparation and consumption; and end of life cycle. An LCA provides a way to account for the material and energy inputs and outputs at each stage. Using the life cycle framework, indicators of sustainability were created and used to analyze and evaluate the current US food system. The results of this assessment show that there are two main concerns associated with the dominant trend in food systems: ecological and socio-economic.

**Ecological Concerns**

Agricultural production, processing, and distribution of food create a variety of ecological concerns related to food systems. The primary concerns include: loss of farmland and erosion, water use and pollution, air pollution, energy consumption, waste, and loss of biodiversity.

**Loss of farmland and sprawl.** Land available for agriculture is being converted to urban built-up land. Within a 15 year time span, from 1982 to 1997, there was over a 50% decrease in farmland throughout the country (Heller & Keoleian, 2003). Furthermore, this development has been disproportionately occurring on farmland with
the highest levels of fertility. The development of this prime farmland is causing the need for less stable non-prime farmland in arid regions. This increased usage in these arid regions leads to increased erosion rates and irrigation demands.

In 1997 the National Resources Inventory of the USDA reported that 1700 megatons of soil eroded from US land. This amount of soil is enough to fill a freight car train that would encircle the planet approximately seven times. If this topsoil was evenly spread over the US cropland, the average rate of erosion would translate in the loss of 2.5 cm of topsoil every 34 years. Under normal agricultural conditions today, it would take roughly 200 to 1000 years to form 2.5 cm of soil (Heller & Keoleian, 2003).

**Water pollution and water quality.** Soil erosion, nutrient leaching, pesticide runoff, and land management practices such as tillage and cropping patterns all contribute to water pollution. This pollution causes a disruption of the ecosystem and interferes with the health of many plant and animal species.

Soil erosion, nutrient leaching, and pesticide runoff from agricultural production are all sources of water pollution. According to The National Summary of Water Quality Conditions, agriculture is the leading source of pollution in the nation’s wetlands, lakes, and rivers (Heller & Keoleian, 2003). Nitrate nitrogen is the main water contaminant in North America and the principle sources are conversion of unmanaged land to intensive agriculture, animal manures, atmospheric deposition and commercial fertilizers (Doran, 2002).

Most states, including urban areas, are polluted with nitrates and pesticides. Minute quantities of pesticides are carried by the rain and air and deposited in a variety of places. The World Health Organization reported that in 1990, an estimated 25 million
people worldwide were poisoned every year by nitrates and pesticides. Another government analysis revealed that in 1998, more than a million American children consumed unsafe amounts of organophosphates from pesticide residues on fruit and other foods each day (Kimbrell, 2002).

The use of water for agricultural irrigation and livestock production also has a large impact on the quantity of water consumed in the US. Agriculture uses 81% of all water consumed in the United States (Jackson et al., 2001). In some areas, freshwater is being extracted from underground aquifers in quantities that exceed the recharge rates causing those resources to become depleted. In addition, as more water is being withdrawn from the ground, the more susceptible aquifers are becoming to changes in weather and to contamination from pollutants.

**Air pollution and air quality.** Agriculture also makes a significant contribution to air pollutants. A major pollutant is ammonia emission which comes from livestock production (Heller & Keoleian, 2003). Another major pollutant is the atmospheric deposition of pesticides. Large quantities of nitrogen compounds applied to fields volatize into gaseous nitrous oxide that are released into the atmosphere (Kimbrell, 2002). According to the EPA, agricultural activities were responsible for 7.7% of total US greenhouse gas emission in 1997. High levels of these gases have been directly linked to acid deposition, ground level ozone pollution, and stratospheric ozone depletion (Kimbrell, 2002).

The increased need for transportation of food over long distances has also resulted in a negative impact on the environment. Trucks used to transport food burn fossil fuels which release carbon dioxide and other greenhouse gases that absorb heat and can
contribute to an increase in global warming (Pirog, Van Pett, Enshayan, and Cook, 2001). Additionally, the fuel generally used in shipping food is a mixture of diesel and low-quality oil. This oil is very high in carbon sulfur which is known to be a serious pollutant (Kimbrell, 2002).

**Biodiversity.** The use of monocultural cropping of annuals, the increase use of genetic engineering, and heavy pesticide application has lead to the suffering of biodiversity (Heller & Keoleian, 2003). Some areas, like those near the Mississippi Delta, become a dead zone (places where there is too little oxygen for fish to live) each spring as a result of nitrogen loading, much of which comes from fertilizer runoff. Other polluted runoff into waterways causes eutrophication, a process that promotes robust growth in algae and other waterborne plants. The unbalanced growth diminished oxygen levels leading to the asphyxiation of aquatic life (Kimbrell, 2002). Overtime, these pollutants will cause the entire structure and function of water ecosystems to be changed.

The increased need for transportation is also bringing about problems for the biodiversity. There have been numerous waves of invasion species as a result of bacteria, parasites, viruses, insects, and animals attached to plans, trains, trucks and ships headed to new places (Kimbrell, 2002).

**Energy consumption.** Another issue of concern that relates to the food system cycle is the use of energy. Agricultural production of food accounts for 20% of the total energy consumed in the US food system and 16% of that is used for food and kindred products manufacturing sector (Heller & Keoleian, 2003). Other sources of energy use include processing and transportation of food items.
Energy consumption is used in transporting raw and processed foods from manufacturing and distribution sites to retail distribution. The increase in transporting goods globally is shocking when looking at inefficiency and damage caused to the planet. One study reported that produce arriving by truck at the Chicago, Illinois terminal market in 1997, traveled an average distance of 1518 miles (Heller & Keoleian, 2003). Another study reported the average distance produce traveled to a terminal in Jessup, Maryland was 1685 miles.

The average components of a 150-gram strawberry yogurt travel about 2,000 kilometers in the process of being made into yogurt and then shipped to consumers. The strawberries come from Poland, corn and wheat flour and syrups from Holland, jam and sugar beets from Germany, as does the yogurt itself, and plastic and paper containers and wrapping come from various other places. The average plate of food on American dinner tables has traveled approximately, 300 miles from source to plate (Kimbrell, 2002, p. 258).

Over the past 30 years there has been a huge increase in fossil fuel use and one of the reasons is the increased use of trucks to transport goods (Pirog et al., 2001). In 1997, 1,790,000 combination trucks used 20.294 billions gallons of fuel; and a majority of them were transporting food throughout the United States. One study reported that every year, more than 485,000 truckloads of fresh fruit and vegetables leave California alone and travel from 100 to 3,100 miles before reaching their destinations.

The use of air and sea transportation also contributes to the burning of fossil fuels. Shipping, which burns a mixture of diesel and low-quality oil is the source of transportation for 80% of the world’s trade in goods (Kimbrell, 2002). Additionally, planes require huge amounts of energy to transport goods; “Each ton of freight moved by a plane uses 49 times as much energy per kilometer as when it is move by ship. A two-
Transporting perishable food over long distances requires the need for refrigeration, which further contributes to the ozone depletion. More than half of the energy consumption in food retail is used in refrigeration alone (Heller & Keoleian, 2003). The processing and packaging sectors of the food system also require energy consumption. Since more than 75% of food grown on farms is processed before it is consumed, processing accounts for one-fourth to one-third of the total energy use in the food system (Hendrickson, 1996). Packaging contributes to as much as 15% of energy use in the food system. The use of energy-intensive materials, excessive packaging, special packaging for long distance travel, and single serving packages is causing an even higher increase in energy demands. In many instances, the energy used to manufacture food packaging now exceeds the inputs of energy for the food product (Hendrickson, 1996).

Waste. Consumers have become expectant on a diverse selection of food. Transporting and preserving these foods has led to a heavy reliance on processing and packaging which has lead to environmental problems associated with waste (Heller & Keoleian, 2003). The use of cardboard (extensively used for shipping processed foods) and other packaging materials is a major contributor to municipal solid waste. In 1997, 10.3% of the total municipal solid waste generated was directly attributed to food and beverage packaging (Heller & Keoleian, 2003).
Socio-Economic

The results of the life cycle assessment test have shown that in addition to the numerous ecological problems associated with the US food system, there are also a variety of socio-economic concerns. Among the primary socio-economic concerns are the negative impacts on farmer’s livelihood, the local economy, and human health and nutrition.

Impacts on farmers and the local economy. With the industrialization of agriculture, production has become extremely capital intensive resulting in a high cost of entry. As a result of this and the increased cost of food processing, handling, and marketing, farmers are receiving smaller and smaller portions of the food bill. In 1998, the farmer’s gross return on a consumers’ dollar spent on food was only 20 cents (Heller & Keoleian, 2003). The rest of the money is used for marketing, labor, packaging, and advertising.

Food retailing in the past has maintained competition between firms of equal economic power. In 2000, however, the top five grocery store retailers controlled 42% of the market share (Heller & Keoleian, 2003). Due to their large volume of sales, they buy directly from large concentrated growers and processors instead of local producers. This concentration in retail market has major implications for what products are purchased and from where. These factors limit the market access for smaller food processors, and distribute capital away from local communities. Without a market for farmers to sell to, less money remains circulated within the local economy.

Human health concerns and nutrition. As a result of changes to our modern environment, overweight and obesity now rank among the most important new health
challenges of our country (Surgeon General Report, 2001). In 1999 61% of U.S. adults and 13% of children and adolescents were overweight. Overweight and obesity are associated with heart disease, certain types of cancer, strokes, arthritis, breathing problems, depression, and type 2 diabetes (Surgeon General’s Call to Action Report, 2001). Approximately 300,000 U.S. deaths a year are associated with obesity and overweight, which rivals smoking as one of the nation’s leading causes of preventable death.

With regard to schools, nutrition and human health concerns related to obesity have received increased attention (Vallianatos, Gottlieb, & Hasse, 2004). Due to changes in dietary behaviors over the years, including increased intake of fast food, soda, and larger portions sizes, type 2 diabetes has become an important risk factor among overweight children and adolescents. These dietary changes are in part, food system issues related to changes in food production, processing, storage, and distribution, as described throughout this chapter. Many of these dietary changes have been proven to be directly influenced by environmental factors including cost, accessibility, and availability of food. These issues are augmented by frequency of meals students eat at school which are higher in calories, fat, saturated fat, and sodium, and are lower in nutrients. According to the American Diabetes Association, unless the public begins to eat more healthfully and exercise, more than one in three Americans born will contract diabetes (Vallianatos et al., 2004).

Summary of the Food System

Current trends in the US food system have threatened its economical, social, and environmental sustainability. The US food system has the capacity to provide many
people with high quality, inexpensive food – but is doing so while also causing major negative ecological and socio-economic consequences. Farmland is being eroded or replaced by developments, the environment is becoming more and more polluted, disposable waste levels are increasing, the biodiversity is being disrupted and destroyed, farmers are loosing their livelihood/jobs, and people are becoming more unhealthy and obese.

As a result of the problems and concerns described above, there is a need for alternative, more sustainable food systems. Examples of food system initiatives that fit within the idea of community or local interest include direct marketing of local farm products to consumers via farmers markets, community/urban gardens, community-supported agriculture (CSA) programs, and farm-to-cafeteria programs (Murray, 2005).

**History of Farm-to-College Programs**

Within the last decade, the movement concerning local food systems and direct connections between producers and consumers and the provision of healthy food to students, has lead to an increase in the implementation of farm-to-school programs in the United States (Murray, 2005). These programs encourage campus cafeterias or other food service operations to purchase local farm products instead of buying from food service vendors. The goals for each individual program are determined by the individuals who created it; however, common goals to a majority of programs include increasing marketing opportunities for small farms, supporting local farmers and the local economy, educating consumers about local farming and the food system, improving the quality of food, improving the nutrition and value of food, and improving institution-community relationships (Sanger & Zenz, 2004).
Farm-to-college programs are only one element of a larger farm-to-institution movement that includes programs that provide locally grown foods to cafeterias of K-12 schools, colleges, universities, nursing homes, hospitals, businesses and a variety of other institutions (Sanger & Zenz, 2004). Within the United States, farm-to-college programs, in particular, are relatively new (Murray, 2005). For several decades or more, a very few number of smaller universities have been buying local produce. Within the last decade, however, there has been an increase in this trend.

The First Farm-to-College Programs

Hendrix College, located in Arkansas, was the earliest and best-known farm-to-college program initiated out of a desire to improve student wellness. It is otherwise known as the “mother” of all local food system initiatives (Johnson & Stevenson, 1998). It began in 1989 and was supported by grant funding. The funding covered the cost for the students who conducted research on the origins of cafeteria food, local food purchases, and student education. The administrative structure of the dining service was revised and a new program coordinator was hired to run and oversee the program. Unfortunately, the campus’ program switched to buying industrial food products when the key leaders of the program left the college (Johnson & Stevenson, 1998) and eventually the local purchasing program ended.

Despite the limited success of the Hendrix case, however, there are a number of other early farm-to-college programs that have survived including St.Olaf College in Minnesota, Bates College in Main, and the University of Wisconsin in Madison (Murray, 2005). Today, there are approximately 109 campuses in the United States with existing farm-to-college programs (Figure 2.1) (Community Food Security Coalition, 2006). Five
of these Universities are located in Ohio: Kenyon College, Gambier; Oberlin College, Oberlin; Ohio University, Athens; Otterbein College, Westerville; and Case Western Reserve University, Cleveland.

![Map of Current Farm-to-College Programs in the US](image)

**Figure 2.1** Map of Current Farm-to-College Programs in the US. Illustration from the Community Food Security Coalition’s farmtocollege.com homepage (2006).

**Farm-to-College Programs at Large Universities**

There has been limited research and literature produced on farm-to-college programs, especially at large universities. In response, Sarah Murray, a graduate student at Washington State University wrote her thesis on the subject of the history, characteristics and student involvement in farm-to-college programs. In order to make generalizations about how farm-to-school programs are started and operated in addition to finding population, geographic location, school demographics, and basic program characteristics, Murray analyzed a subgroup of 16 farm-to-college programs at large public universities. These universities are defined as four-year public universalities with 10,000 students or more (Murray, 2005).
General Farm-to-College Program Characteristics

With the exception of the University of Wisconsin-Madison and the University of Northern Iowa, a majority of the farm-to-college programs have just recently been implemented on campuses, with an average program start date of 2001. With the exception of North Carolina State University, the University of Arizona and the University of Montana-Missoula, most farm-to-college programs at large universities are concentrated in the Northeast, Midwest and West coast regions (Murray, 2005). As compared to the general population of farm-to-college programs, programs at larger universities have much less variation in number of students, estimated annual food budget, and number of meals served daily.

Of the sixteen universities, at least fifteen of the campuses have local farm products on regular menus and for special events. In addition, 88% of the public universities have self-operated food services. Approximately three-fourths of the schools purchase some local organic produce and almost three-quarters of the schools pay more for local products than those they normally purchase (Murray, 2005). The percentage of total food budget spent on local farm products ranges from 0.04-10%.

In terms of meal plans, Murray’s findings showed that approximately 19% of schools offered a “mixed” option of board (plans that require students to pay a set amount of money per term for a specific number of meals per week in a campus dining facility) and a la cart plans (students can buy individual items and the prices are deducted from a general account similar to a debit card) (Murray, 2005).

A majority of schools, or 56%, define “local” produce as food coming from state-wide or regional-wide areas, 19% bought produce from 50-200 miles from the school,
and 25% bought produce from less than 50 miles from the school. Also, a majority of
schools purchase food from distributors and/or individual farmers, while others purchase
food from farmer-managed co-ops and farmers markets (Murray, 2005).

**Benefits of Farm-to-College Programs**

The farm-to-college program has many benefits that extend beyond the primary
goal of getting locally grown food into campus cafeterias. In 2004, The Community
Food Security Coalition (CFSC) sent out a survey to key individuals at a number of
universities with farm-to-college program. Results from this study indicate that benefits
of farm-to-college programs can be divided into four main categories: 1) benefits to
farmers and the local economy, 2) benefits to students, 3) benefits to the university, and
4) benefits to the environment.

**Benefits to the farmers and the local economy.** In America, food production and
processing are very centralized with a majority of our food grown and distributed by
large-scale or corporate farms. Some of these farms are even located in other nations.
For this reason it is difficult for small-scale farmers to sell their produce and processed
meats directly to local markets (Bellows 2003). Farm-to-school programs can benefit
farmers by strengthening the capacity and enhancing the viability of local and regional
farmers. By directly purchasing produce from local and regional farmers, universities can
become a new, reliable, institutional-scale market for those farmers (Vallianatos,
Gottlieb, & Hasse, 2004). The farmers can benefit from increased sales to the university
as a result of both volume of sales and the higher dollar value of each item sold.

Farm-to-college programs create the opportunity for farmers to sell large
quantities to a few local customers while reducing labor, marketing, packaging and
transpiration costs. Often times, institutional markets offer lower prices than retail outlets, but, they allow farmers direct purchasing power enabling them to capture a higher percentage of the food dollar than selling to wholesale distributors (Sanger & Zenz, 2004).

An additional benefit is that these programs can decrease the barriers that industrial scale agriculture has created between consumers and farmers. This is of considerable importance when addressing the place of agriculture within a regional planning framework.

Farm-to-college programs can also benefit the local economy. Students who are given access to local food in school become more aware of the local food system thus are more encouraged and motivated to increase their personal purchases of locally produced food at farmers markets and farm stands (Bellows, 2003). This causes a positive ripple effect on the local economy and increases the demand for fresh produce and the need for local farmers. Money that is spent locally circulates within that community multiple times while supporting local farms, businesses, people and communities repeatedly (Sanger & Zenz, 2004). Locally spent funds produce additional tax revenue that local governments need to provide community services.

**Benefits to the students.** Farm-to-college programs have been shown to provide students with health and educational benefits. The rise of farm-to-school programs has piggy-backed the increased attention to the issues of obesity and diet-related health problems (Vallianatos, Gottlieb, & Hasse, 2004). Farm-to-school programs can play an important role in tipping the balance of the school food environment. Evidence has shown that when cafeterias serve fresh, ripe fruits and vegetables, there is a greater
consumption among students and adults of fruits and veggies (Sanger & Zenz, 2004). As a result, better eating habits are formed. Serving local fruits and vegetable in campus cafeterias increases access to foods that are difficult to obtain when eating away from home – especially for those from low-income families.

Health practitioners agree that fresh food is the most nutritious, especially food that comes from foods that is in season from one’s locale (Norberg-Hode, Gorelick, & Merrifield, 2002). This is due to the fact that vitamins in almost any food are gradually lost from the time of harvest. Many foods for the global market are bred for “monocultural growing conditions and the ability to be transported long distances, rather than for nutritional content” (Norberg-Hode, Gorelick, & Merrifield, 2002). Tomatoes are just one example of a type of food that is much less flavorful and nutritious when purchased from a distant vendor. Tomatoes are picked green and hard to survive mechanical harvesting and long-distance transportation. They are then pumped full of ethylene gas to artificially initiate the ripening process.

Another factor associated with the decreased nutrients in global food is the large amount of processing (Norberg-Hode, Gorelick, & Merrifield, 2002). Highly refined foods have most of their nutritional content stripped away. The global food industry compensates the loss of taste and color of food due to processing by adding artificial flavoring and colorings. Often times, these chemicals are used simply on the bases of being cheaper than real flavorings and spices. For example, real vanilla is replaced by a chemical substance called vanillin. To extend shelf life required by global foods, chemical preservatives are deployed (Norberg-Hode, Gorelick, & Merrifield, 2002).
Since local food requires less processing, they often contain no chemical additives. Food purchased from local farmers through farm-to-college programs is often better because food is less apt to contain pesticides than those acquired through standard produce-procurement channels that (Vallianatos, Gottlieb, & Hasse, 2004). Some programs go to the extent of purchasing produce that is entirely, or largely organic.

Meat and poultry that is raised on small-scale, diverse farms is better than those raised on farms intended for the global market (Norberg-Hode, Gorelick, & Merrifield, 2002). Animals that are allowed to range freely receive more exercise, have a more varied diet, and are exposed to commensal bacteria which exclude and build resistance to harmful pathogens. Livestock production carried out on a large scale basis, however, is kept in tightly confined conditions where the potential for disease outbreaks are much higher. This results in the increased use of antibiotics which pose significant health risks for both the livestock and consumers.

Farm-to-college programs also offer educational benefits to the students. Implementing these programs promotes the education of students about nutrition and where their food comes from (Vallianatos, Gottlieb, & Hasse, 2004). Consumers have become extremely disconnected from the farms and farmers who grow their food. This results in a lack of control over the quality and safety of their food. Farm-to-college programs provide fresh food from known sources.

Farm-to-college programs also create opportunities for students to get involved in educational community-based activities including recycling, composting, and community gardening (Bellows, 2003). Some farm-to-school programs have hands-on educational
components that teach students about nutrition by demonstrating how fresh, seasonal fruits and vegetables can not only be good for you, but can also taste great.

**Benefits to the environmental.** When the agricultural economy fails to provide farmers with a sustainable livelihood, farms become vulnerable to sprawl. The current consolidation in the food processing industry has stacked the deck against smaller farmer and created challenges to their survival (Vallianatos, Gottlieb, & Hasse, 2004). Many small farmers don’t have markets where they can receive a reasonable price for their produce and as a result, many farmers reluctantly give up their livelihood and sell their land to developers. Between 1992 and 1997, the American Farmland Trust reported that the United States lost six million acres of agricultural land to development. This highlights the effect of poor planning and sprawling land-use choices.

Farm-to-college programs are one link in the food system. As these systems are improved, local farms become more economically viable which increases the likelihood of farmland being preserved for agricultural purposes. As a result, these programs have become a key player in efforts to prevent loss of farmland and to slow down urban-edge sprawling development (Vallianatos, Gottlieb, & Hasse, 2004).

Farm-to-college programs also provide benefits to the environment by promoting sustainable farming practices. Pursuing local direct market opportunities can encourage attention to environmental management practice. Farmers, approached by consumers concerned about their food and the environmental impacts of farming, may make more of an effort to manage nutrient flows, soils, and pests in a more environmentally sound way (Hinrich, 2003).
Purchasing food from local sources has additional advantages that benefit the environment. Since a majority of the local food is consumed fresh, it requires less packaging, processing, and refrigeration. The need for less packaging cuts back on the amount of waste created by non-biodegradable plastic, cardboard, paper, glass, and other packaging materials required for transporting food over long distance (Norberg-Hode, Gorelick, & Merrifield 2002). In addition, purchasing local food results in a reduction of energy use and pollution emission that occurs when transporting food over great distances (Sanger & Zenz, 2004).

**Benefits to the university.** Universities benefit from farm-to-college programs by increasing their support from both the community and students. Universities that support food services with incorporated farm-to-college programs receive increased community recognition as positive contributors to community health and economy. They are given greater community support and recognition for supporting local farms (Sanger & Zenz, 2004). The university becomes a model for both the community and society at large.

In addition, there has been evidence to show that the implementation of food-to-college programs results in an increase in the number of students and faculty who participate in the cafeteria program. This provides the university with more money and improves their marketing/public relations (Murray, 2005). As the trend of moving towards more sustainable practices increases, students have begun to select universities based on their contribution toward sustainability. Universities that have a farm-to-college program are thus more competitive and increase their chance of recruiting more students.
Challenges/Obstacles

As with the implementation of any program in a large institution, there are associated challenges and obstacles. A survey conducted by the Food Security Coalition (CFSC) in 2004 included questions pertaining to barriers and obstacles of farm-to-college programs (Food Security Coalition, 2006). The results of the survey showed that the primary challenges of implementing a farm-to-college program are coordinating purchases and delivery of products, finding local product supply, product pricing, getting farms approved by a food service company, engaging the students, and getting administrative support.

Information obtained from Murray’s interviews with food service management confirmed these challenges. One reason for having problems with coordinating purchase of products is the difficulty of time limitations to initiate and develop relationships with local farmers (Murray, 2005). Despite the attempt to help farmers secure a solid market, several managers were frustrated because some farmers were not willing to work within the constraints of some food services’ including the need for standardized ordering and delivery procedures, and wholesale prices.

Another factor contributing to the challenge of purchasing food is the school contract structure. The degree to which schools purchase produce directly from farmers or from their primary suppliers depends on each individual school’s contracting structure. Those who purchase directly from farmers have either a more flexible purchasing structure or have negotiated specifically with their primary suppliers. Some schools have reported that limitations on purchasing contracts were problematic (Murray, 2005). Another study, one that compared 14 different farm-to-college programs, had similar
findings (Johnson & Stevenson, 1998). The data showed that self-operated colleges are more likely to have a local food initiative than contract-managed colleges; self-operated dining services have greater autonomy. A third independent farm-to-college study found that independent operation of the college allows for the implantation of evolving college policy easier than using a corporate provider such as Aramark (Bradley-Cook et al., 2006).

Delivery of the produce can also be a barrier. Some programs are faced with the challenge of restrictions on campus truck traffic that limited the number of deliveries (Murray, 2005). An additional challenge is determining how produce will be delivered—by a farmer or conventional distributor that agrees to work with local producers. More information about this challenge is described later in this chapter under the San Francisco feasibility study.

Determining and setting prices for locally grown food is another obstacle. An important issue is the manner in which students pay for their food. Data collected from Murray’s interviews report that some students at one school with an al la carte plan were willing to pay more for particular items, such as organic versus conventional apples. The food services managers at other universities with al a carte plans, however, reported a difficulty in finding the appropriate price point that consumers would be agreeable to pay. Additionally, food service managers commented on the challenges of meeting the needs of students’ prices in regards to the higher cost of locally grown or organic produce (Murray, 2005).

Other challenges of food-to-college programs include acquiring the needed volume of produce, getting specific products during different seasons having a limited
number of labors to wash, peel and chop the fresh produce, and dealing with institutional bureaucracies and inertia (Murray, 2005).

Engaging students to take interest and participate can also produce challenges. Where the students come from can have an impact on the program. Students from urban areas going to a rural campus may not have a sense of agriculture products available and commuter students who spend a short period on campus may be less likely to get involved with activities such as supporting food purchasing changes (Murray, 2005).

In organizing student advocacy groups, there is a challenge of high turnover rates of both individual students and the entire group (Murray, 2005). The two primary reasons for these high rates are a loss of momentum once they achieve their primary goal of getting local food on campus, and a decrease in the time and availability of students due to other competing campus and personal activities.

**Definition of Local**

One of the complex concepts of farm-to-college programs is defining the term “local.” By definition, these programs are tied to the concept of “localized” food systems. Due to the wide variety of circumstances in which farm-to-college programs exist, terms such as local and sustainable are often vaguely defined (Murray, 2005).

Purchasing local food has become a method under which people attempt to decrease economic concentration, social disempowerment, and environmental degradation in the agricultural landscape (Hinrich, 2003). Attributes of local food systems include the economy, prevalence of independent artisan’s producers, community well being small-scale production, biodiversity, resource protection, and democratic participation. Localization has become a catchword as a counterpoint to globalization
which is characterized by market economy, the dominance of transportation corporations, corporate profits, large-scale production, monoculture, and resource consumption and degradation.

Much of the widespread consumer and activist interest in the local food system base their support on the presumed positive aspects of the local food system which are centered on helping local farmers keep dollars spent on food in the local economy, and environmental protection through reduction of food miles and the need for packaging (Murray, 2005). Several authors, however, have stressed that the term “local” should be used carefully. It is important not to confuse or combine the terms local, organic and sustainable.

Just because food is purchased from small-scale local farmers does not mean the produce is organic. The National Organic Program defines organic foods as those “produced by farmers who emphasize the use of renewable resources and the conservation of soil and water to enhance environmental quality for future generations. Organic meat, poultry, eggs, and dairy products come from animals that are given no antibiotics or growth hormones. Organic food is produced without using most conventional pesticides; petroleum-based fertilizers or sewage sludge-based fertilizers; bio-engineering; or ionizing radiation” (Oxfam America 2002, p. 22).

With exception of decreasing food miles and the need for packaging, purchasing food from small-scale local farmers does not mean that it is necessarily better for the environment. Small-scale farmers are not inherently better environmental stewards who use best management agricultural practices (Hinrich, 2003). Some small farmers do intensify their management by including best environmental practice. Some small
farmers, however, hampered by age, disability or growing economic marginality, may lack the awareness or the means to partake in sustainable production practices. One good effect of pursuing local direct marketing is that it may encourage attention to environmental practices by farmers who anticipate concerned customers investigating farm practices (Hinrich, 2003). Such farmers may then change their practices to become more environmental aware so that they can be involved in the local food initiative.

Another reason to caution the term local is related to geography. Depending on where an institution is, may change the definition of local from food that is raised in a specific county or one nearby to food that is raised in the state, to food that is raised regionally. The location of the university in relation to distance from farms and the produce available from farms has an impact on how each university defines the term local. For these reasons, the term local has a variety of definitions, defined by different food-to-college programs based on their location and primary goals.

**Implementation of Farm-to-College Programs**

Local food initiatives can come from anyone including a student, faculty member, food service manager, non-profit organization, or a governmental organization. Whether or not the idea takes hold, however, depends on where it lands. Farm-to-college programs vary from university to university. Several studies have been conducted to determine how different food-to-college programs are implemented. The findings from these studies presents information about the roles that geographic location of the school, student participation/interest, administrative support, available local resources, state and school policies, influence and affects the way a local food initiative is established and maintained.
Champion for the Product and Campus Support

Johnson and Stevenson (1998) did an in-depth look at six colleges and universities around the country to determine the key characteristics of existing local food system initiatives at colleges and universities, and to find out what makes a local food system initiative work or not work. They concluded that there is no single “sure-fire” formula for establishing or sustaining a farm-to-college program; however, there are at least one or two “key ingredients to make the recipe work” (Johnson & Stevenson, 1998). They found that success of local food initiative required a “champion for the project coupled with broad support within the college and campus community” (Johnson & Stevenson, 1998). Schools that have attempted to establish programs, but failed, attribute their failure to a lack of a champion and a broad coalition, insufficient power among advocates, disagreeing operational and profitable interests of the contract manager, and food safety concerns.

Food Service Operations

Another key factor in determining the implementation and success of a farm-to-college program is how the food service is managed and the interest/openness management demonstrates to new food service approaches (Johnson & Stevenson, 1998). Data from Johnson and Stevenson’s report suggested that food system initiatives are more likely to succeed if the food service management is self-managed or college-operated compared to those that are contract-managed operations. This is because college-operated food services have more autonomy to establish and maintain relationship with local vendors as opposed to contract managed counterparts.
Meal Plans

The type of meal plan offered by the food service operation can have an impact on the success of a farm-to-school program. The two main types of meal plans are board or debit-card-ala-carte system (Johnson & Stevenson, 1998). Some schools only offer one meal type, others offer both. With the board plan, student prepay at the beginning of each semester or quarter which allows them a certain number of meals. Food services must keep its costs within the budget allotted for that set number of meals. Institutions with board plans must make internal adjustments of serving low cost meals like spaghetti to make up for buying more costly organic or local produce. If profit is the main motivation for a food service manager, then it is more likely to keep costs within margin by purchasing whatever quality can be afforded at a lower price.

The debit-card-ala-carte system allows students to self-select different items at prices and quality points that are attractive and affordable to the student (Johnson & Stevenson, 1998). The type of meal plan allows students to choose the food that they want depending on the price they are willing to pay.

School Setting

Geography, or location, can have an impact on the number of small farms in the area in addition to the number of local farmers with direct-marketing experience. Agriculture surrounding the school is best when there are smaller farms that produce a wide variety of crops as opposed to large-scale farming of a single, specialized crop (Murray, 2005).

The community in which the college is located is also important. It is best if there are more community-supported agriculture programs and a good network of local and
organic producers (farmers markets civic gardens, etc). Also, whether or not there are
other schools/colleges in the immediate area lends to the possibility of the schools
combining farm-to-school college efforts.

**Student Involvement**

The primary consumers of food in campus dining facilities are students. For this
reason, student eating choices can have a large impact on the success of a farm-to-school
program. To date, little research has been done on the role that students play in these
types of programs (Murray, 2005). There has been research conducted on campus
environmental initiatives and institutional changes. From this literature, it has been found
that both bottom-up/grass roots support including students and top-level involvement
prove to be the most successful efforts at initiating environmental changes on campus
(Murray 78, 2005).

To gain more information about the role and impact of students in farm-to-college
programs, Murray conducted a series of interviews with sixteen large universities who
had farm-to-college programs. She found that determining the overall impact of student
involvement was a complicated issue and due to the limited scope of her study, it was
hard to draw many firm conclusions (Murray, 2005). Her results did, however, indicate
that in some cases, the starting up of a program and/or its survival was dependent on
students, while in other cases students were only minimally involved. Murray suggests
that a possible explanation for the success of programs without the help of students could
have resulted because strong administrative support overcame the lack of grass-roots
advocacy in starting the program (Murray, 2005).
Review of Literature

Of the programs in which students were essential to the program, Murray’s findings showed student roles to include promotional/educational outreach for programs, research on the availability of local products, menu or event planning, coordinating the purchase or delivery of products, participating in the contract bidding process, helping pick vegetables on the farms, and food preparation.

Administration Support/Institutional Change

The importance of individual leaders, particularly administrators and faculty play an important roll in the success for campus environmental initiatives. Studies have shown that “top level” leaders are very important to farm-to-college programs (Murray, 2005). All six universities in Murray’s study showed that the food service managers played a huge role in either starting the program or seeing it through.

Suggestions of successful implementation strategies based on Murray’s study include the importance of getting food service managers “bought in” to the program regardless of the food services operations type (Murray, 2005). The commitment of food service managers is necessary to get the program started and maintain it over the long run. Additional evidence suggests the importance of getting food service managers involved as early on in the process of planning the program as possible for the purposes of addressing operational concerns as well as avoiding bad relationships.

Another important factor related to the possibility of implementing a program is the bureaucratic structure and rules of the university (Murray, 2005, 67). The slow nature of change within a bureaucracy was a specific challenge mentioned by respondents of the interviews. Another huge challenge is the structure of purchasing contracts and associated
rules. Having a more flexible purchasing structure will increase the ease of implementing a farm-to-college program.

**Summary of Implementation Strategies**

Specific steps to establish a successful farm-to-college differs from one university to another. Despite all factors, it is important to be persistent and take time with change. The common theme in all programs is to have at least one main champion to see the program to the end. It is important to have student, faculty, and food service management support in addition to establishing trusting relationships between buyers and sellers.

Initially, it may be crucial to begin with small changes that can eventually produce larger effects. It may be important to begin by switching a few food items to local sources and add more as time and support increases (Murray, 2005).

**Farm-to-College Feasibility Studies**

In order to design a valid and reliable feasibility study, a literature review was conducted of existing feasibility studies for initiating farm-to-college programs. Since this type of program is relatively new, there are few feasibility studies in existence. Much of the current literature regarding farm-to-college programs focused on a description of the program, not determining the feasibility of implementing the program. It was concluded from this literature review that a feasibility study of implanting a farm-to-school program at a large university did not exist.

The following section describes four sources of literature which offer valuable guidelines for designing a farm-to-school feasibility study. Two of the sources were feasibility studies, and the other two sources were manuals which described the general
content of a feasibility study. Information from these sources was combined to facilitate the design of the feasibility study.

**San Francisco Farm-to-School Report**

In 2002, members of the San Francisco Food Systems began a project to incorporate fresh locally grown foods into the National School Lunch Program within the San Francisco Unified School District (SFUSD) (Rimkus, Jones, & Ona, 2004). Part of this project included a feasibility study that “explored the larger structural issues that might support and/or inhibit a lasting farm-to-school project in San Francisco Unified School District” (Rimkus, Jones, & Ona, 2004, 11). Research was conducted on the premise that farm-to-school programs should be as equitable and sustainable as possible.

Research for this feasibility study looked at the district’s assets and constraints in six areas: food service facilities, labor and training, nutrition policy, school gardens, nutrition education, and mechanisms for communication, ordering, and delivery. Primary activities of the feasibility study included 1) conducting best practices research around farm-to-school projects, 2) building relationships and partnership within the San Francisco Unified School District, 3) conducting a School Food Environment Survey to gather information about the school-specific factors that might support and/or inhibit a lasting farm-to-school project, and 4) identifying and evaluating barriers to project implementation and providing recommendations to overcome such barriers.

The results of these activities provided insights to difficulties and challenges they were faced with in attempting to implement a farm-to-school program. Some of these challenges included bureaucratic challenges, the scarcity of resources within the district, competitive food sales, lack of integration between district departments, lack of
communication and connection with communities, and the lack of poverty level adjustments for the city and county.

Having realized these challenges, researchers were able organize activities with SFUSD to address those challenge. They took into consideration the school-specific factors that could help or inhibit the implementation of an equitable and sustainable farm-to-school project, and proposed areas of focus to work on, further building on the work which had been conducted in the past year. As a result of their feasibility study, they have advanced their project plan, and hope to ensure that their local food community becomes invested in food system activities that support sustainable environment and health communities.

The San Francisco feasibility study was different than the UC feasibility study in three main ways. First, the San Francisco study focused on implementing a farm-to-school program within a large urban district with centralized production, as opposed to a single university. Second, the San Francisco Unified School district included a network of 116 schools including K-12 schools and Child Development Centers, whereas UC includes only college and graduate level students. These differences did have some affect when determining what factors to consider for implementing a farm-to-school program in each situation. A program designed for an entire district requires many more factors of consideration including, a wider variety of stakeholders and other administrative officials, required meal plans that must comply with regulations from the U.S. Department of Agriculture, different policies and regulations, and a combined district annual budget. Third, the San Francisco study was conducted at a part of a larger project with the goal of actually implementing a farm-to-school program, in which additional activities to support
the implantation accompanied the feasibility study. The purpose of the UC feasibility study, however, was only to determine the feasibility of implanting a farm-to-college program at UC. For this reason, only data was collected and no additional implementation activities accompanied the study.

As a result of the difference described above, not all activities and research methods used in the San Francisco feasibility study were to the UC feasibility study. There were, however, some aspects of the San Francisco feasibility study that proved to be a valuable resource for designing the UC feasibility study.

One extremely valuable bit of information taken from the San Francisco study came about as a result of their “best practice research” (Rimkus, Jones, & Ona, 2004, p. 12). The members of the SFUSD began their research with a thorough review of models of farm-to-school projects across the nation. Their research showed that there are numerous models of farm-to-school projects and there are also a variety of different approaches to procurement and distribution systems. They also identified four primary pitfalls found in previous farm-to-school projects: 1) not paying enough attention to all stakeholder groups throughout all steps of planning and implementing the program; 2) funding the operations with grant money instead of developing the project in a manner that would be self-sustaining; 3) not being clear with farmers and food service directors about the quantities of food items that needed to be ordered, the duration of the contract relationship, the quality of produce, and/or the prices; 3) having an underdeveloped distribution infrastructure purchasing and transporting produce from small and medium-sized farmers (Rimkus, Jones, & Ona, 2004).
Their research also concluded that a great deal of energy and resources are needed to implement any type of farm-to-school program. They found that the following things must be necessary in order to implement such a program:

A school must have the necessary equipment to handle the ordering, storing, prepping, and cooking of fresh raw ingredients. Schools must have dry and refrigerated storage space, kitchen facilities with sinks and tables, an operational stove and oven. They may need additional equipment like salad bar units, crocks, utensils, salad spinners, cutting boards, knives, and ice makers. Schools must also be able to provide the labor to prepare the food, serve the food, monitor the lunch line, and deal with any additional waste generated. Additionally staff must also be trained and certified to prepare meals from fresh, raw ingredients. Because farmers generally sell their products unprocessed, farm-to-school projects are almost always more labor intensive than conventional food service models. Aside from these facility needs, there is a need for a system of regular and effective communication. Growers need to know school district’s produce demands and ordering habits in order to plan for the appropriate variety, quantity and specifications (size, value enhancement, packaging, nutrient content, etc.). School districts need to know which growers they can contact in their region, seasonal availability of local and regional produce, and the price ranges for the desired local products. Thinking seasonally is not something food service directors typically have to do. Schools typically prefer to order products that have undergone a bit of processing like washing, peeling, chopping, and/or shredding. They also need high quality products, reasonable costs, easy ordering processes and a dependable delivery system. Many early forms of farm-to-school projects managed to fulfill all these requirements in a contained setting like an individual school site served by a few regional farms (Rimkus, Jones, & Ona, 2004, pp. 13-14).

The above information provide researchers of the San Francisco and the UC study with an understanding of the data that needed to be collected in order to assess whether or not it is feasible to implement a farm-to-school program at an institution.

The primary research activity conducted in the SFUSD feasibility study that was most applicable to the UC study was a food service operations assessment. The SFUSD began collecting data for their feasibility study based on the recommendations from the previous farm-to-school projects. An assessment of the food service operations in SFUSD
was conducted and included information regarding administration roles, budget, meal prices, purchasing and suppliers, produce ordering, production and preparation, labor, distribution and delivery, menus, marketing, meal times and location, and waste/recycling/composting. The results of their assessment provided them with valuable information that helped determine some of the challenges or barriers they would be faced with in implementing the program.

The second step of the San Francisco feasibility study was administer a *School Food Environmental Survey*. This survey was designed to capture the autonomy of each schools site in administrative decisions and practices. The information taken from this survey was analyzed and a list of themes was produced. These themes represented challenges in their efforts to bring fresh, local and sustainable produce to the school district and were aptly considered when planning their following steps.

The survey also helped to identify the different activities within the district related to food system initiatives. This gave them an idea of the current interests and motivations of the local school community. Finally, the survey, in combination with the food service operations information, allowed the researchers to identify opportunities and possibilities in the implementing of a farm-to-school program.

A majority of information collected from the *School Food Environmental Survey* and described in their report was not applicable for the UC study. This was due to the primary difference between the two studies- the San Francisco study focused on a district school-aged program while the UC study focused on a single university program. For this reason, the survey was not used in the UC study.
At the end of the San Francisco feasibility study, researches found that there were two key questions when approaching farm-to-school projects in any district. The first question was “how to bring regional farm fresh produce into the district,” and the second question was “how to widely distribute it throughout the district” (Rimkus, Jones, & Ona 2004, p. 35). Since the UC study is not concerned with the district area, the second question was not applicable, but the first question was. The difficulty of this question was analyzed and weighed against the impacts on the students, and school community.

Upon further research, it was found that there are several strategies to procure farm fresh produce. One option is to work within the existing channels of a conventional produce distributor, while advocating for the addition of produce from small local farmers (Rimkus, Jones, & Ona, 2004). The benefit of this approach is that the school would continue working within a preexisting infrastructure that includes an easy ordering system, refrigeration, trucks, and the flexible delivery times.

A second strategy of procuring fresh food involves direct involvement with farmers. This requires the food service director to establish a good, strong relationship with farmers. Food could be purchased from local farmers’ markets or from the farms directly. The school or the farmer would have to arrange means of transportation for deliveries as well as arrange special delivery schedules. Some schools have used a forager to act as a broker between the school and small-to-mid sized local farmers. The forager provides the school with product information such as, what is available, in what quantity and in what season. Farmers directly deliver the products to the school. The forager can relieve food service managers of ordering responsibilities. Traditionally, foragers have been non-sustainable positions funded through grants.
A third strategy of procurement is to begin a consolidation from scratch, “i.e. a growers’ cooperative or non-profit collaborative” (Rimkus, Jones, & Ona, 2004, p. 36). This strategy requires small-to mid-sized farmers to collaborate in order to ensure sufficient variability and quantity of product available to supply the school. There is the possibility with this strategy, that for added value, the produce could be delivered pre washed, peeled, or chopped. The benefit of this strategy is that it involves one price list, one order, one phone call, and one delivery. Additionally, farmers benefit from sharing one insurance policy, transportation and storage space equipment.

**Grinnell College Local Food Study**

One of the best resources used to develop the UC feasibility study was a report written by a group of students from Grinnell College about a group research project regarding local food (Bradley-Cook et al., 2006). The purpose of their group research project was to “investigate the reasons for and the possibility of increasing the quantity of locally-produced food served in the college dining halls” (Bradley-Cook et al., 2006, p. 4). There were seven topics of focus: 1) environmental impact, 2) nutrition, 3) dining service logistics, 4) producers logistics 5) economic impact, 6) student opinion, and 7) local food supply.

The first stage of their research looked at the impact of Grinnell College’s food system on the Environment. To begin, the students developed a priority food list that contained food items that could be purchased locally for their school. They obtained information about the production location and the food pathway through phone interviews with representatives from each supplier. Next, they used Mapquest to calculate the total food miles for each item on a priority food list. The routes listed on Mapquest
may not have been the exact routes taken by the vendors, but it provided an accurate approximation. Next they used the Weighted Average Source Distance to find a single numerical value that represents the amount of food that is transported the distance from the producer to the consumer. Finally, they determined fuel consumption and carbon emissions from these vendors.

From this research, they determined that the current Grinnell dining service had already begun to make purchasing decisions from local sources, but only a few. Much of the food came from far away, which required the need for transportation of goods, which required burning more fossil fuels, which harm the environment. They found that compared to the College’s current food system, a more locally based food system would minimize the distance that food travels, thus reduce fuel consumption and the release of harmful carbon emissions.

The second section of the report focused on nutrition and local foods. The purpose of this section was to “analyze some aspects of the nutritional value of local food compared to conventionally sourced food to show that in addition to positively affecting the environment, eating locally has important health implications” (Bradley-Cook et al., 2006, p. 25). Specifically, the research explored the difference in the nutritional value of locally and conventionally produced fresh fruits and vegetables. They concluded that local food, which travels a shorter distance, retains more nutritional value and can also be harvested at an optimal time. Furthermore, since there is no need to extend the shelf life of local produce, there is less of a need for added preservatives or genetic engineering. More details of this section have been described in the first part of this chapter under the “benefits to the students subsection.”
The third section of their report focused on dining service logistics, which was “an important aspect of incorporating more local food into Grinnell’s operations since it is a part of the actual day to day operations of the Colleges food service” (Bradley-Cook et al., 2006, p. 33). This chapter described the campus dining service operation and basic logistics involved in incorporating additional local food into the dining hall. The information included the average number of meals served a day, when the dining service operates, additional events the food service provides for, type of operation, whether or not local food was already used, and types of meals plans. This section of the report also assessed the outlook of dining service administrators. Using the above information, the students were able to identify constraints faced by the dining service and offered recommendations on how to overcome those challenges.

The information obtained in this section showed that the dining service had specific requirements of the food products that it purchased including “acceptable appearance, sufficient quantity, appropriate packing, reasonable price, and timely delivery of the food products” (Bradley-Cook et al., 2006, p. 4). In order to incorporate local products into their current food system, producers had to meet those requirements. Additionally, the food service department had plans to move to a more to a marche’ style dining facility (cooking stations where students can choose specific food items they want to the chef to use in a particular dish), which would open up the possibility of utilizing more local foods.

The fourth section of this report focused on finding producers who could potentially supply to the college. First the students had to define “local.” To do this, they turned to a local food organization and asked them for their definition of local. Based on
this result, the students used a concentric ring model to define local and put Grinnell at the center. A series of rings surrounding Grinnell defined the source of local food. They wanted to make sure their definition of local would allow the program to achieve preset goals of lowering food miles, supporting local economies, and increased freshness of food.

Once they had established a local area, they found farmers by using information given to them from local farmers markets, class material, and other food organizations in the area. They began looking for producers in the Poweshiek County, who grew crops that the dining service already used and who sold their produce wholesale; they assumed wholesale producers would be able to provide enough volume of food items to the college. In total, they identified thirteen producers. Next, they expanded their search for producers to include the state of Iowa. This was because some food items, such as meat and dairy, were not found within the first concentric ring.

Once identified, each farmer was contacted by phone so the student could obtain information to assess each farmers operation, interest in, and prospects for marketing their product to the campus dining service. The students developed and used a questionnaire to guide the phone conversations. The questionnaire included questions pertaining to the farm’s location, what food items they produced, method for producing those items, how they currently sold their products, and their interest to selling to the college.

From this information the students determined that there were a number of local producers who would be able to sell produce to the school. For some food items such as dairy and meat, they would need to purchase from producers located outside the
concentric ring. They also determined that the institutional buying model best suited to fit into Grinnell’s current local food condition is a producer cooperative. In this model, a group of producers would collaborate to meet the demands of the college. Through collaboration, a group of many small farmers could provide the larger volume demand, while still maintaining a degree of control over their operation. As a result of this information, the student’s next step was to identify how to form a co-op in Grinnell with the intention of using it as a source of locally grown produce.

The fifth section of the report was an economic analysis that determined the economic impact of buying locally grown food, the percent of their dining services food purchase that are locally-sourced, and the difference in price between select locally and conventionally sourced food items (Bradley-Cook et al., 2006). The analysis began by finding out how the College’s dining hall food purchasing budget was spent on locally-sourced food items during the course of a fiscal year (August to August). Next the students estimated the difference between local and conventional prices. To make a price comparison, the students made a list of the quantities and average prices for 14 selected food items. A list was made for both the food items that was currently being purchased by the dining service and for the same food items that would be purchased by local producers. To find out the information about the local food items, some of the students received quotes from producers for the selected food items.

A comparison was based on nominal price differences which did not incorporate any labor costs that might accompany a shift to locally sourced food into the price difference. The results showed that while some local food cost more, others cost less. Additionally, there was a wide range of price difference among the various foods studied.
This information was provided to the dining service to make decisions about whether or not they can purchase locally grown food. Based on their research, the dining service could not only save money by purchasing some food locally, it could also benefit the local economy.

The sixth section detailed findings of a student opinion and campus-wide survey to determine how interested Grinnell students were in local food, and in particular, in having more locally-sourced food available. The survey was conducted as an on-line survey sent out to 1,421 students enrolled at the college (of which 742 responded). The survey included demographics, ranking, multiple choice, and short answer questions. Students were asked questions about freshness, nutrition, recognition of the term “local,” and economic and environmental implication of buying locally grown and processed food. These surveys were collected and analyzed. The findings showed that students were strongly supportive for the idea of incorporating more local food into the dining halls. This information was used to make the assumption that student satisfaction and enthusiasm for dining hall meals would increase if more locally-sourced food was served.

The seventh and final section of their study looked at other local food system initiatives outside of their institution. In particular the students assessed the potential for more local use in the Grinnell-Newburg School District. The students worked together with a principal of one of the elementary schools to create a pilot program aimed at starting in the fall of 2006. The project emphasized the “importance of an integrated and sustainable food system in the Grinnell community” (Bradley-Cook et al., 2006, p. 5).

In conclusion, the Grinnell study found that there was a viable option for serving locally produced food in the Grinnell College dining halls. The study provided “a
foundation for the understanding of the issues behind the local food situation at Grinnell and encourages the future development of this system” (Bradley-Cook et al., 2006, p. 5). Since the study was completed in the Spring of 2006, the Assistant Director of Grinnell Dining Service Operations said that there has been an increase in the amount of locally grown produce incorporated into the Grinnell dining halls (T. Waltersdorf, personally communication, December 13, 2006). The study brought to attention local producers in the area that the dining service was not aware of. In the first five months of the 2006-2007 school year, the College purchased three-fourths the amount of total local produce purchased during the entire 2005-2006 school year. The assistant director said there is still the challenge of buying locally grown food within the Midwest region because a majority of the produce is corn and soybeans. They have, however, been successful in purchasing locally grown apples, honey, grapes and some berries. They are currently working with some local farmers to also purchase a specific size of tomatoes. Locally grown produce is purchased when it is in season, and when the season ends, they will revert back to using a conventional distributor to supply the same produce from a different region.

There were many similarities between the Grinnell and the UC study; both studies investigated the possibility of incorporating local produce into the dining service, the research in both studies was conducted by a students, and both programs were to be implemented at a college institution. The two primary differences were 1) The Grinnell study had ten students doing the research, while the UC study was conducted by only one student, and 2) Grinnell was a much smaller institution than UC and thus, dealt with a much smaller quantity of local product demand.
Despite these differences, the Grinnell study was a very great model for the UC study. The UC study used many of the same questionnaires and interview forms that were used in the Grinnell study; only slight modifications were made to better fit the exact needs of the UC study. The information gathered for the UC study was also analyzed and reported in the same manner as the Grinnell study.

**Buy Local Food and Farm Toolkit: A Guide for Student Organizers**

The *Buy Local Food and Farm Toolkit* was designed to help guide students in how to establish a local food system initiative (Oxfam America, 2002). Although much of the information in the guide described specific actions or steps to actually implementing the a local food system, the guide did stress that before any farm-to-college program can be planned implemented, it is essential to have a full knowledge of the current situation on campus regarding food sources and the way the food service operates. It stated that knowing the feasibility of implementing a program can help iron out possible potential problems before they occur, it will help to shape a future campaign, and help to set reasonable goals for a farm-to-college program at a specific university.

The guide recommended the following list of questions to ask during a feasibility study. How the food service operation is managed? Where does the current food come from? What vendors are used and are they contracted? What are the kitchen resources? Are the students and administration interested and supportive of the program?

The guide also included a section that described the importance and strategies of investigating local food sources. Some methods of finding local producers included contacting the local food cooperatives and health food stores in the area, statewide farmers association, farmer coalitions and research institutes, and extension agents at
state universities. The guide also provided links to two websites, the U.S. Department of Agriculture and the Local Harvest, which offer valuable information about what locally grown produce exists in a specified area, and what farms sell that particular produce.

The guide stressed the importance of knowing some basic background information about the local farmers and provided a list of nine important questions that should be asked to potential producers during the feasibility study. Additionally, the guide emphasized the importance in knowing there is a champion who is extremely supportive and motivated in carrying through with the program, as well as having support from the food service managers.

The information presented in this toolkit helped guide the design of the UC feasibility study. The question listed in the guide book about the current situation on campus regarding food sources and the way the food service operates were incorporated in to the UC Food System Questionnaire, and the questions about the local producers were used to develop a UC Producer Questionnaire.

The Crunch Lunch Manual

The Crunch Lunch Manual described a case study and fiscal analysis model of the farmer’s market salad bar in the Davis Unified School District (Brillinger, Ohmart, & Feenstra, 2003). The information contained in the manual can be used to help individuals determine fiscal feasibility of farm-to-school programs. The manual included resources for community organizers and schools interested in creating farm-to-cafeteria programs specifically in K-12 schools, however, information can also be applied to programs in other institutions such as universities.
The most applicable and important feasibility measure taken from this report and used in the UC feasibility study was a Farm-to-School Readiness Assessment Checklist. This checklist was intended to determine the suitability for a school’s readiness for a farm-to-school program. The checklist was designed to be used by people interested in initiating a farm-to-school program, and who are in the early stages of researching the potential of establishing a program at their school. This check list was a resource that was used in the UC study. The check list from the Crunch Lunch Manual was modified slightly so it could be applied in a university setting, and then used as a method of data collection.

**Farm-to-College Programs in the Ohio, Kentucky, Indiana (OKI) Regions**

Seven universities located within the OKI region had farm to college programs: Case Western Reserve University (Oh), Gambier College (Oh), Kenyon College (Oh), Oberlin College (Oh), Ohio University (Oh), Otterbein College (Oh), Tri-State University (In), and Wabash College (In). Basic information about each about these farm-to-college programs was available from the Community Food Security Coalition, Farmtocollege Webpage (2007). Additional information not included in the webpage was obtained from personal communication with representatives from each farm-to-college program (B. Grubisich, Tri-State University; MJ Arthur, Wabash College; E. De Mers, Case Western Reserve University, and H. Sacks, Kenyon College; 2007). Table 2.1 shows characteristics of the campus and food service operation for UC and universities within the OKI region with farm-to-college programs. Table 2.2 shows some key characteristics of farm-to-college programs within the OKI region. Details of these tables and programs are explained below.
Table 2.1 Comparison of Campus and Food Service Operation Characteristics for Farm-to-College Programs in the OKI Region and UC

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of Students</th>
<th>Type of School</th>
<th>Type of School Operation</th>
<th>Type of Meal Plan</th>
<th>Number of Meals Served a Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case Western Reserve University</td>
<td>Cleveland Ohio 9,000 Private Contract Managed (Bon Appetit)</td>
<td>Mixed</td>
<td>3,400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kenyon College</td>
<td>Gambier Ohio 1,600 Private Contract Managed (AVI)</td>
<td>Board</td>
<td>2,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oberlin College</td>
<td>Oberlin Ohio 3,000 Public Contract Managed (Bon Appetit)</td>
<td>Mixed</td>
<td>3,200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ohio University</td>
<td>Athens Ohio 16,000 Public Self-Operated</td>
<td>Board</td>
<td>10,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Otterbein College</td>
<td>Westerville Ohio 3,000 Private Contract Managed (Bon Appetit)</td>
<td>Board</td>
<td>1,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tri-State University</td>
<td>Angola Indiana 1,000 Private Contract Managed (Bon Appetit)</td>
<td>Board</td>
<td>1,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wabash College</td>
<td>Crawfordsville Indiana 900 Private Contract Managed (Bon Appetit)</td>
<td>Board</td>
<td>700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>University of Cincinnati</td>
<td>Cincinnati Ohio 35,244 Public Contract Managed (Aramark)</td>
<td>Board</td>
<td>2,742</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Of the seven schools within the OKI region, all but one school was, like UC, contract managed. Of the food service companies, Bon Appetit, which served five schools, was the most popular. AVI and Aramark were the other contract companies, and represented one school each. Of the seven schools within the OKI region, five were private and two were public. The number of students each school had enrolled ranged from 900 to 16,000. Generally, the private schools had far fewer students than the public. The exceptions to this rule, however, were Case Western Reserve University which was a public school with 9,000 students, and Oberlin College which was a private school with only 3,000 students. All of the schools in the OKI region with a farm-to-college program
Review of Literature

had significantly fewer students in comparison with UC, which had a total of 35,000 students. The range of total number of meals served a day within each school was as low as 700 and as many as 10,000. In comparison, UC served more meals per day than four of the schools and fewer meals per day than the remaining three.

The earliest farm-to-college program within the OKI Region was established by Ohio University in 1998. Tri-State University was the second school to implement a program in 2003, followed by the remaining schools in 2004. Three schools purchased produce from a distance of less than 50 miles from their campus, while the remaining schools purchased produce from within a 200 mile distance from the school campus. Only one program was initiated by students, three were initiated by dining food service staff, and two were initiated by the food service management company. Both school’s whose programs were initiated by a food service company, were contracted with Bon Appetit. Currently, the Food Service Director was the primary person responsible for running the program for five of the schools. Of the other two schools, one program was primarily run by the Resident District Manager, and the other by the food service management company on-site administrators.

Every school incorporated locally purchased food into the regular menus and a majority of schools also incorporated the locally grown food into special events menus. Two of the schools incorporated locally purchased food in catering menus and only one school sold the food at an on campus convenient store. Three of the schools paid more money for local food, two did not, and one school paid more only some of the time. Combined, the farm-to-college programs in the OKI region purchased locally grown
greens, tomatoes, squash, peppers, root vegetables, and dairy, free-range eggs, fruit, and meat.

Local producers for each program were found through a variety of methods including visiting farmers markets, teaming with sustainable organizations and networking through them, researching the agriculture market within Ohio, prevailing upon local distributors to secure producers, and cold calls and visits. To overcome the challenge of seasonal availability of goods, some schools purchased non-seasonal goods from distant producers, while others changed their menus to accommodate the changing availability. The primary challenges regarding policies and regulations, expressed by Kenyon College, were issues of third party safety inspections, liability insurance, and lengthening of payment terms.

The most significant barriers to establishing or sustaining a farm-to-college program within the OKI region included finding growers or local product supply, coordinating purchase and delivery of products, and seasonal availability of products. Some of the strategies and recommendations offered by participants in these farm-to-college programs included start small, get administration support and build relationships among key players, and be willing to invest time for research and other implementation needs.
### Table 2.2 Characteristics of Farm-to-College Programs in the OKI Region

<table>
<thead>
<tr>
<th>Program</th>
<th>Start Date</th>
<th>Distance of Local Food from Campus</th>
<th>Who Initiated the Program</th>
<th>Person primarily responsible for running the program</th>
<th>How local food products are incorporated into the menu</th>
<th>Is the cost of local produce more expensive?</th>
<th>Primary local farm products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case Western Reserve University</td>
<td>2004</td>
<td>50-200 miles</td>
<td>Dining food service staff</td>
<td>Resident District Manager</td>
<td>Regular meals</td>
<td>Yes</td>
<td>Lettuce, Greens, Root vegetables, Squash</td>
</tr>
<tr>
<td>Kenyon College</td>
<td>2004</td>
<td>50-200 miles</td>
<td>Dining food service staff</td>
<td>Food Service Director</td>
<td>Regular Meals</td>
<td>Sometimes</td>
<td>Seasonal Produce, Meat, Dairy</td>
</tr>
<tr>
<td>Oberlin College</td>
<td>Unknown</td>
<td>50-200 miles</td>
<td>Students</td>
<td>Food Service Staff</td>
<td>Regular Meals</td>
<td>Unknown</td>
<td>No Answer</td>
</tr>
<tr>
<td>Ohio University</td>
<td>1998</td>
<td>Less than 50 miles</td>
<td>University Administration</td>
<td>Food Service Director</td>
<td>Regular menus</td>
<td>Yes</td>
<td>Produce, Pork, Dairy, Value-added products</td>
</tr>
<tr>
<td>Otterbein College</td>
<td>2004</td>
<td>50-200 miles</td>
<td>Dining food service staff</td>
<td>Food Service Director</td>
<td>Regular menus</td>
<td>No</td>
<td>No Answer</td>
</tr>
<tr>
<td>Tri-State University</td>
<td>2003</td>
<td>Less than 50 miles</td>
<td>Food service management company</td>
<td>Food Service Management Company (on-site administrators)</td>
<td>Regular menus</td>
<td>No</td>
<td>Produce, Fruit, Meat, Pork</td>
</tr>
<tr>
<td>Wabash College</td>
<td>2004</td>
<td>Less than 50 miles</td>
<td>Food service management company</td>
<td>Food Service Director/Manager</td>
<td>Regular menus</td>
<td>Yes</td>
<td>Salad greens, Tomatoes, Squash, Peppers, Cage-free eggs</td>
</tr>
</tbody>
</table>
Summary of Literature Review

This chapter reviews the literature pertaining to the food system cycle, the history of farm-to-college programs, the definition of “local,” the implementation of farm-to-college programs, farm-to-school feasibility studies, and farm-to-college programs in Ohio, Kentucky, Indiana (OKI). According to this literature review, the US food system has the capacity to provide many people with high quality, inexpensive food. The negative externalities from this system are major ecological and socio-economic consequences. As a result, there is a need for a more sustainable food system. One such alternative is the farm-to-school program which encourages campus cafeterias or other food service operations to purchase local farm products instead of buying from food service vendors. Benefits of farm-to-college programs can be divided into four main categories 1) benefits to farmers and the local economy, 2) benefits to students, 3) benefits to the university, and 4) benefits to the environment. Today, there are approximately 109 campuses in the United States with existing farm-to-college programs; seven of these universities are located within the OKI region.

One of the challenges of any farm-to-college program is defining the meaning of “local.” The term local varies from institution to institution depending on the goals of the program and the institutions geographical proximity to farmers. Local food initiatives can be instigated by a variety of individuals. Due to the difference in each university, there is no “sure fire” formula for establishing or sustaining a farm-to-college program, however there are a few key ingredients that make the program a success: a champion for the project coupled with broad support within the college and campus community. Other noteworthy factors of consideration include the food service operation, management, and
logistical structure, school setting, student involvement, administrative support, local resources, and compliance with federal and university policies and regulations.

Since farm-to-college programs are relatively new, there are few feasibility studies in existence. It was concluded from this literature review that a feasibility study of implanting a farm-to-school program at a large university did not exist. The literature that is available does provide general guidelines for designing a feasibility study. A combination of the information, slightly modified, was used to facilitate the development of the feasibility study of this thesis.
CHAPTER 3

METHODOLOGY

The purpose of this study was to determine the feasibility of implementing a farm-to-college program with regard to the on-campus areas of focus (food service operation, administration support, and student support) at the University of Cincinnati’s main campus dining facilities. This chapter describes the research design and methodology used to answer the three sub-questions asked in chapter one. The answers to these questions provided data to determine if it is feasible to implement a farm-to-college program at UC.

This chapter is divided into four sections. The first section explains the overall research design and its rational. The second section describes the data collection methods used throughout the study. The third section explains how each sub-unit of analysis was investigated. The fourth chapter explains how the data was analyzed and reported.

Research Design

The design of this study is a known as a single-case (embedded) study. The essence of a case study is to focus on a decision (Yin, 2003). A case study allows for the investigation of an empirical topic by following a defined set of procedures. This strategy has a distinct advantage over other methods of data collection when “a ‘how’ or ‘why’ question is being asked about a contemporary set of events, over which the investigator has little or no control” (Yin, 2003, p. 9).

One rational for conducting a single case study was that this thesis is a unique case. While it is possible to implement a farm-to-college program at a variety of different universities, the focus of this case study was solely on the University of Cincinnati. A
Methodology

second rational for conducting a single-case study was the longitudinal case, “studying the same single case at two or more different points in time” (Yin 2005, p. 42). Since the time boundary for this particular case was from October of 2006 to April of 2007, the data collected and analyzed within this time frame produced specific findings related to that time frame. Due to the inconstant, changing nature of variables within this study, a second case study conducted at a different point in time may produce different results.

Methods of Data Collection

The three sub-questions asked in chapter one led to the selection of mixed qualitative and quantitative methods of data collection. The primary data collection methods that were used in this study included surveys, interviews, and internet searches. All methods of data collection involving human subjects were submitted to the Institutional Review Board for approval.

Surveys

Survey research is an important method of quantitative data collection commonly used in applied social science research. In survey research, data is collected from a select group of respondents using questionnaires. In this study, five questionnaires were used:

1) University of Cincinnati Food Service System Questionnaire, 2) Readiness Assessment Questionnaire, 3) Distributor Questionnaire, 4) Administrative Staff Interest for Local Foods Questionnaire, and 5) Student Interest for Local Food Questionnaire. Details about each questionnaire are described below.

The University of Cincinnati Food Service System Questionnaire was geared toward obtaining data about the UC food service operation and logistics. The content of this questionnaire was based on information taken from The San Francisco Farm-School
The questionnaire had a total of fifty-five open-ended questions divided into twelve topics: 1) administration/operation; 2) meal locations, times and quantity; 3) meal plans and prices; 4) menus; 5) non-produce food items; 6) produce ordering; 7) kitchen facilities; 8) labor; 9) distribution/delivery; 10) marketing; 11) waste/recycling/composting; and 12) budget. Each question was aimed at getting specific qualitative and quantitative factual information related to each of the twelve categories. Examples of the questions include “How is the food service operated?”, “How is the food ordered?”, “Where and when are meals served, How much do meals cost?”, “What menu options are there?”, “Who are the primary vendors?”, “How is food stored and prepared?”, and “Where are deliveries made?”. To see the full list of questions, please refer to Appendix A, the University of Cincinnati Food Service System Questionnaire.

The Readiness Assessment Questionnaire was designed to help assess the readiness of the administration and food service department to implement a new food program. The information received from this questionnaire helped provide an overall picture of the elements that needed to be considered for implementing a farm-to-college program at UC. The development of this questionnaire was primarily modeled after the Farm-to-School/School District Readiness Assessment Checklist from the Crunch Lunch Manual, 2003 (Brillinger, Ohmart, & Feenstra, 2003), but also contained questions recommended by the Farm-to-cafeteria connections: marketing opportunities for small farms in Washington State, 2004 report (Sanger & Zenz, 2004).
The Readiness Assessment Questionnaire had a total of 17 open-ended questions divided into four topics: history and context of the food service department, school community context, financial, and labor. Unlike the University of Cincinnati Food Service System Questionnaire, which was very narrowly focused on the current dining hall operation, the Readiness Assessment Questionnaire included questions about broader aspects of the dining service. Examples of some of the questions include “Does the university have a history of incorporating local food into its meal plans?”, “Is the food service focused on promoting health?”, “Are there any other local food initiatives on campus?”, “What is the financial standing of the food service department?”, “What are the current challenges faces by the department?”, and “Is there a nutrition education specialist in any department of the university that works with the menu options?”. For a complete list of the questions, please refer to Appendix B, the Readiness Assessment Questionnaire.

The Distributor Questionnaire was composed of six short open-ended questions inquiring where select produce purchased for the UC originated, what methods of transportation were used to deliver the produce, what processing steps occurred between production and distribution, and were there changes in producers from season to season. The content of this questionnaire was taken from an interview form used in the Grinnell College local food study (Bradley-Cook et al., 2006). To see a complete list of questions, please refer to Appendix C, the Distributor Questionnaire.

The Administrative Staff Interest for Local Foods Questionnaire was designed to determine the level of support/interest the food service directors and managers had for a farm-to-college program, determine what administrators know about local produce and
the effects buying locally have on the economy and environment, and to identify potential challenges or barriers of implementing a farm-to-college program at UC. For a complete list of questions, refer to Appendix D, the *Administrative Staff Interest for Local Foods Questionnaire*.

This questionnaire was composed of six short-answer questions and ten multiple choice questions. Many of the questions were modeled after the student interest in local food survey conducted in the Grinnell College Local Food study (Bradley-Cook et al., 2006). In addition, questions were added to the survey to gain more information specific to the administration views. Multiple choice questions were used to minimize the time required for completion of the questionnaire, and to provide standardized answers that could be easily analyzed and reported using charts and graphs. The short answer questions were used for questions that required more detailed and personalized responses. This was especially important for the question regarding potential challenges and barriers of implementing a program. The study assumed that each administrator or staff person would have a different opinion influenced by his/her work experience.

The *Student Interest for Local Food Questionnaire* was designed to gain insight into student support/interest for the inclusion of more locally grown produce into food served at the UC dining facilities. It was also used to find basic demographic information, determine what students knew about the effects buying local produce on the economy and environment, establish whether or not students would be willing to pay more for locally grown produce, decide how important fresh produce is to students, determine degree to which students believe freshness is important and is related to nutrition and gauge the level of commitment students are to having more fresh produce in
the cafeterias. For a complete list of questions, refer Appendix E, *Student Interest for Local Food Questionnaire*.

The survey consisted of 18 multiple choice questions. The content and format of the questionnaire was designed after the student survey used in the Grinnell College local food study (Bradley-Cook et al., 2006). Multiple choice questions were used to minimize the burden on participants by allowing for quick completion of the survey. In addition, multiple choice questions created standardized answers that could be easily analyzed and reported using charts and graphs.

**Interviews**

An in-depth interview is commonly used when seeking qualitative information from an individual that has unique or important knowledge about the research topic (Hesse-Biber & Leavy, 2006). To find more information about past, current, and future administration and student involvement and support for environmentally sustainable initiatives at UC, a semi-structured, in-depth interview was conducted with Eric Maurer, a UC faculty member who initiated and directs the Environmental Studies Program at UC. Maurer has also been actively involved with implementing and advising both student and faculty environmental organizations on campus.

The in-depth interview format allowed for the collection of information concerning the thesis – administration and student interest/support for environmentally sustainable programs at UC. The interview was semi-structured, meaning that a particular set of pre-determined questions were used to guide the conversation to remain focused on the research topic, but allowed for the interviewee to have some latitude and freedom to talk about what was of interest to him (Hesse-Biber & Leavy, 2006). This
Methodology

format allowed the researcher to obtain answers to the primary questions of interest, while it allowed the conversation to flow more naturally, thereby opening up the opportunity for gaining new, unpredicted knowledge about the research topic.

An interview guide, consisting of four questions, was created to provide the interviewee with a set of topical questions to guide the interview. The focus of the first question was on the interviewee’s background with regard to his work at UC. The focus of the second question was on the administration and what they have done to support/promoted environmental sustainability on campus. The focus of the third question was on UC students and what they have done to support/promote environmental sustainability on campus. The focus of the fourth question was on the university as a whole, and what direction it is likely to go in the future with regard to environmental sustainability? For more details about the interview guide, refer to Appendix F.

Internet Searches

Since farm-to-college program are relatively new, very few books have been published on the subject. For this reason, a majority of the information obtained for the literature review was found on the internet. Additionally, a variety of supplemental information related to UC, such as contact information for faculty, food service department information, and campus student organization listings, was available on the UC website which was accessed by the internet.

Google was the primary search engine used to locate information about farm-to-college programs. The two primary search terms that provided the most relevant links were, “farm-to-school programs” and “local food initiatives.” The search led to the main farm-to-college website produced by the Community Food Security Coalition
Methodology

(www.farmtocollege.org). This website provided information concerning farm-to-college programs in the U.S. and Canada and included basic program characteristics and a list of resources including publications. These resources included other websites, listservs, and information about how to locate local farm products.

The second main use of the internet was to find supplemental information about the UC Food Service Department and other research related information specific to UC. The search engine used to find this information was the University of Cincinnati’s homepage (www.uc.edu). The search terms used to find this information were “food service”, “campus organizations”, and “environmental sustainability.” This UC Webpage also had a directory from which names, phone numbers, and email addresses of research participants were found.

Data Collection Strategy for Each Unit of Analysis

The unit of analysis relates to the crucial problem of defining what the “case” is (Yin, 2003, p. 22). Selecting the appropriate unit of analysis is dependent upon accurately specifying the primary research question. The primary unit of analysis in this case study was the University of Cincinnati’s food service department. Due to the nature of this research, attention was also given to subunits including dining service administration and UC students. This case study is referred to as an ‘embeded’ case study because it involved more than one unit of analysis (Yin, 2003). These sub-units created opportunities for analysis which enhanced the insights to the single case.

The time boundary in which this case study took place was from October 2006 and April 2007. The research questions were answered using data that was collected and analyzed within that five months time span.
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**UC Food Service Operation**

The first step in obtaining information about the UC food service operation was to contact John Hautz, the Director of Auxiliary Campus Services at UC. Hautz was selected to participate in this study because he was the primary person that oversaw the food service operation for the UC Food Service Department. Hautz’s contact information was found on the UC website, and an initial phone call was made to explain the purpose of the study and to ask for his participation. Hautz agreed to provide information for the study, and was e-mailed two questionnaires: 1) *University of Cincinnati Food Service System Questionnaire*, and the 2) *Readiness Assessment Questionnaire*. Hautz completed the first questionnaire with the assistance of Spyros Gravas, the Director of the Board of Operation and returned the questionnaire by email. Hautz also completed and returned the Readiness Assessment *Questionnaire* shortly after.

To acquire information concerning the distribution and processing procedures of the produce purchased by the UC dining halls, the manager of Piazza Produce, UC’s primary produce vendor, was contacted by phone and asked to provide information for the study. The managers contact information was found on Piazza Produce’s website. The manager agreed to answer the questions on the *Distributor Questionnaire*, and requested that the questionnaire be complete over the phone. The primary investigator read the questions to the manager in an interview format, and recorded the answers on the questionnaire form.

**Administration Support/Interest**

A list of the top UC food service administrators and staff members was created using the information provided by the *University of Cincinnati Food Service System*.
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*Questionnaire.* From this list, Hautz and Gravas indicated who should be included in study: Hautz, Gravas, dinning hall directors, managers, and executive chefs.

Each participant was given an *Administrative Staff Interest for Local Foods Questionnaire* to complete. The primary investigator emailed the questionnaire to Hautz and Gravas. The other selected participants also received the questionnaire via email, however, Gravas was the person who sent the questionnaires under his email address. It was thought that the response rate would increase if the questionnaire was distributed by the supervisor.

Additional information about top level administrative efforts and support for promoting environmentally sustainable initiatives campus-wide was obtained through an interview with Eric Maurer, the Director of Environmental Studies at UC. Maurer’s phone number was found on the UC website, and an initial phone call was made by the primary investigator to Maurer to explain the study ask for his participation. A one-hour interview was scheduled at a location most convenient for Maurer. The primary investigator used the interview guide to direct the interview and unearth answers to specific research questions. The information was recorded by the primary investigator on a computer during the time of the interview.

*Student Interest*

Two methods were used to obtain data about student support and interest in establishing a farm-college-program at UC. The first method was by administering a *Student Interest for Local Food Questionnaire.* In order to make generalizations about the larger student population, the questionnaire needed to be administered to a sample size of 135 students. This sample size was determined using a statistical formula
available in Designing and Conducting Survey Research; the formula was calculated using population value of 2,742 (equivalent to number of meals served a day in the dinning halls), a confidence level of 85%, and a confidence interval of 6% (Rea & Parker, 1997, p. 132).

The survey was administered to a total of 135 randomly selected UC students in the CenterCourt dining hall. The days and times that the survey was administered was randomized using the following process. The seven days of the week were written on individual pieces of paper and placed in one envelope, and the prime eating hours (8:00am, 9:00am, 12:00pm, 1:00pm, 5:00pm, and 6:00pm) were written on individual pieces of paper and put into another envelope. One day of the week was randomly chosen from the envelope and paired with a randomly chosen time. This was repeated until a total of five days were paired with five different times. Twenty-seven surveys were then collected on each of the five randomly selected days during the randomly selected the times for a total of 135 surveys. Students, eating in the CenterCourt dining hall, who were just finishing their meals, were approached by the primary investigator and asked to participate in the study. Upon consent, a paper survey was handed to the student and allowed approximately ten minutes to complete it. When the student had finished, the primary investigator picked up the surveys and thanked the participant. Every student who was asked to participate in the study, agreed to fill out and complete the survey.

The second method of determining student interest in promoting an environmentally sustainable program at UC was to identify campus environmental groups
and find out what types of activities they had been involved with. This information was found both on the UC webpage, and provided by Maurer’s during his in-depth interview.

**Analyzing and Reporting the Data**

Once the information had been collected, the next step of the feasibility study was to analyze and report the data. The information collected about the different units of analysis was analyzed and reported in a variety of ways. Each unit of analysis was first analyzed within its own group and used to answer the three sub-questions presented in chapter one. Once each unit of analysis had been analyzed, all the information was combined and analyzed as a whole to determine the answer to the primary research question. Details about the analysis for each unit of analysis are provided below.

**UC Food Service Logistics/Operations**

The data collected about the food service logistics and operation was compiled and transcribed into a written summary. This data was used to answer the first sub-question presented in chapter one: Can a farm-to-college program be incorporated into, and supported by the current UC food service operation and logistical structure? The information was analyzed in relation to the information provided in the literature review. Suggestions and recommendations, as described in the literature review, regarding what food service operation and logistical factors are needed to successfully establish a farm-to-college program were compared with UC’s food service operation and logistics. The purpose was to reveal similarities and differences between the UC food service operation and logistical structure, and recommendations described in the literature review. This information helped to determine potential barriers or challenges in implanting a farm-to-college program as a result of an inadequate or incompatible food service operation.
Administration Support/Interest

All of the data collected from the *Administrative Staff Interest for Local Foods Questionnaires* were entered into an Excel spreadsheet and analyzed to determine the answer to the sub-question presented in chapter one: Are the UC food service administration interested/supportive of having more locally grown produce incorporated into the campus dining halls? A variety of graphs and charts were created to display the data.

The first section of the analysis determined what the participants knew about local food and farm-to-college programs. It also determined how many participants were interested in incorporating more local food into the UC dining halls. A bar graph was created to show three comparisons: 1) the number of participants who had heard the term local food with those who had not, 2) the number of participants who knew what a farm-to-college program was with those who did not, and 3) the number of participants who were interested in incorporating more local food into the UC dining halls with those who were not.

The second section of the analysis determined what participants knew about the effects of buying local food. A bar chart was created to show the comparison between the number of participants who believed buying locally was beneficial to the environment and local economy with those who felt it produced negative effects. The next section of the analysis compared the number of participants who were willing to change the menu and price in order to incorporate local food, with those who were not willing; a bar graph was created to show this comparison. The last bar chart was created to show the different levels at which participants were invested in making local foods a priority at UC.
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The final section of the analysis combined the answers to the open ended questions regarding potential challenges and barriers in implementing a farm-to-college program at UC, and what would be required to motivate or convince the dining service administration and staff to establish the program. The data was analyzed for overlapping and unique answers; the responses for both questions were listed and used to determine the feasibility of implementing this program and with regard to how the administration felt about this issue.

The information received from the interview was used as supplementary information to gain a general idea of how supportive top campus administrators were toward environmentally sustainable activities or programs at UC. This information was used for in the final concluding section of the thesis.

Student Support/Interest

All of the data collected from the student surveys was entered into an Excel spreadsheet and analyzed to respond to the answer to the sub-question asked in chapter one: Are UC students at interested/supportive of having more locally grown produce incorporated into the campus dining halls? A series of charts and graphs were used to visually report the results of the survey.

The data was first analyzed to determine the demographics of the participants who completed the survey. One bar-chart was created to show the breakdown of when students were graduating, and one pie chart was created to show the percentage of students who lived in dorms compared to those who live off campus. This information was used to determine what types of students most often eats at the dining halls.
Next, the data was organized to show how often the participants of the study eat at the dining halls, if they would eat more frequently if more local food was served in the dining hall, and how fresh students thought the dining hall food was. This information provided insight to how the students felt about the current food served at UC.

Finally, the data was analyzed to determine how students felt about local food and the possibility of incorporating more locally grown fruits and vegetables in the dining hall. A pie chart was created to compare the percentage of students who had heard of the term local food with those who had not, and a bar chart was created to show these responses. A pie chart was created to show whether or not the students knew if local food was served in the UC dining hall. A pie chart was created to show how many students were interested in incorporating local food at UC. Two charts were created to show what kind of changes the students were willing to make in order to incorporate local food. The first pie chart compared the percentage of students who were willing to restructure the menu with those who were not, and the second pie chart compared the percentage of students who were willing to pay more for local food with those who were not. Lastly, a bar chart was created to show the different levels in which participants were invested in making local foods a priority at UC.
To determine if it was feasible to implement a farm-to-college program at the University, three sub-questions were used to guide the research and discern whether or not the current UC food service operation would be able to support a farm-to-college program, and, if the administration and students would be interested/supportive of the program. This purpose of this chapter is to describe the answers to the three sub-questions.

**UC Food Service Logistics and Operation**

The first research sub-question sought to determine if a farm-to-college program can be incorporated into the current UC food service operation and logistical structure. Dining service logistics were an important aspect of incorporating local food into the UC dining service system because they were part of the day-to-day operations of the Colleges food service. To answer this sub-question, data was collected about the administration, food service operation and labor; UC food service logistics and operation; meal plan prices and menus; meal locations, times and quantity; non-produce and produce ordering; kitchen facilities; distribution and delivery of food; food service budget; the current challenges faced by the food service department; and procedures for implementing a new food service project.

This section describes the campus dining service operation and basic logistics involved in incorporating additional local food into the UC dining hall. A majority of information was taken from the *Food System Operation Questionnaire*, the *Readiness Assessment Questionnaire*, and the *Distributor Questionnaire*. Additional information
was collected from websites and personal communication with representatives from different organizations that conduct business with UC. The information was analyzed to determine the requirements, possibilities, and potential challenges of incorporating locally grown produce into the current food service system.

**Administration, Operation, and Labor**

The UC food service department was comprised of approximately 20 administrators, 200 people who prepare meals, and 180 servers (J. Hautz, personal communication, November, 2006). Originally, the UC dining service was self-operated, however, a number of years ago (about 25) UC food service changed to a contracted service operation. Administrators from the University of Cincinnati Housing and Food Services Department drafted a proposal that outlined and stipulated all requirements expected from a contractor including quality of food and types of meal plans. The proposal was given to the UC purchasing department for their input, and then the proposal was sent out to a variety of contractors for bids. The contractor that best met the terms of the proposal was selected. Contracts can be three, five, or 10 years long and are renewed one year prior to expiration.

Since 2000, the UC food service department has contracted Aramark to provide both retail and residential meal plans; the contract is in effect until 2010. Aramark manages the day to day operations, while the University of Cincinnati strategies the offerings and controls overall quality. Figure 4.1 is an organizational chart that shows the administrative breakdown of the UC dining service department (S. Gravas, personal communication, January, 2007).
Figure 4.1 University of Cincinnati Food Service Organizational Administration Flow Chart
Contingent with the terms of the contract, Aramark was completely responsible for ensuring safe handling, storage, and preparation of all food and meals. Aramark was also responsible for deciding what food to order and who to order it from. Aramark chooses a preferred vendor based on the vendor’s ability to meet Aramark demands in terms of quantity, seasonality, and price (S. Spyros, personal communication, January, 2007).

The primary supplier of meat and other protein foods, frozen goods, and non-perishable foods was Sysco; the primary supplier of dairy was Trauth Dairy; and the primary supplier of fresh produce was Piazza Produce Company (J. Hautz, personal communication, November, 2006). If necessary, Aramark would contract with the vendors, however the current agreements were non-contractual.

Meal Plans, Prices and Menus

The dining service offered residential Student Meal Plans and Independent Meal Plans. Tables 4.1 and 4.2 below, describe the details of each type of meal plan and their respective cost.

Table 4.1 Description and cost of the independent meal plan at the University of Cincinnati. Table came from the University of Cincinnati Food Service webpage (2006).

<table>
<thead>
<tr>
<th>Independent Meal Plan</th>
<th>Description</th>
<th>Cost/Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platinum</td>
<td>45 all-you-care-to-eat meals/quarter + $100 Bearcat Card Dollars.</td>
<td>$375</td>
</tr>
<tr>
<td>Gold</td>
<td>33 all-you-care-to-eat meals/quarter + $50 Bearcat Card Dollars.</td>
<td>$255</td>
</tr>
<tr>
<td>Silver</td>
<td>25 all-you-care-to-eat meals/quarter + $30 Bearcat Card Dollars.</td>
<td>$195</td>
</tr>
<tr>
<td>Lunch Fare</td>
<td>15 all-you-care-to-eat lunch meals/quarter + $30 Bearcat Card Dollars.</td>
<td>$120</td>
</tr>
<tr>
<td>Lunch Fare Plus</td>
<td>15 all-you-care-to-eat lunch meals/quarter + two meals at Mick &amp; Mack's Contemporary Cafe + $30 Bearcat Card Dollars.</td>
<td>$137</td>
</tr>
</tbody>
</table>
Table 4.2 Description and cost of the student meal plan at the University of Cincinnati.

Table came from the University of Cincinnati Food Service webpage (2006).

<table>
<thead>
<tr>
<th>Student Meal Plan</th>
<th>Description</th>
<th>Cost/Quarter</th>
<th>Cost/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>209 Value Plan (19 meals per week)</td>
<td>209 meals/quarter*</td>
<td>$1,124</td>
<td>$3,372</td>
</tr>
<tr>
<td>154 Plan (14 meals per week)</td>
<td>154 meals/quarter*</td>
<td>$1,069</td>
<td>$3,207</td>
</tr>
<tr>
<td>132 Plus Plan (12 meals per week)</td>
<td>132 meals/quarter*</td>
<td>$1124</td>
<td>$3,372</td>
</tr>
<tr>
<td></td>
<td>$100 BCC dollars**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All menus must comply with the Cincinnati Health Department regulations pertaining to food production and sanitation. In addition, compliance to FDA standards must be met through Sysco and other vendors.

The dining service offered a variety of menu options from which guests can mix and match food choices, including a very rich salad bar option. Other than dairy products, there has been no history of incorporating local within the menus; however, the dining service was focused on promoting healthy food. Not only did they recently switched to 0-trans fat frying oil, but they had also included many menu options that include vegetarian dishes, fish, and pastas. At the entrance of each dining hall, Aramark had placed nutritional Kiosks to allow students to see the nutritional content of all the different meals.

Aramark had also recently established the “Just 4U” program, which offered dishes that are specially prepared to fit within different diet preferences. There were symbols next to some of the menu choices that specify the different types of meals including cal smart, low fat, heart health, vegan, vegetarian, and carb counter. Additionally, unveiled this fall, was a food station completely devoted to vegetarian and vegan food. Finally, Aramark also operated the Zia Juice Bar, located in the campus
recreation center. The ZIA offered a whole host of nutritional items such as smoothies, fresh squeezed juices, and even fresh wheatgrass shots.

**Meal Locations, Times, and Quantity**

The dining service offered everything from restaurant-style dining to grab-n-go locations. Meals were served both in retail (food courts, restaurants, faculty club, coffee shops and catering) and in dining halls. Catering services were offered when requested, the retail outlets primarily served meals at lunch time, and the dining halls served meals all day long (Monday-Friday 7:00am-8:00pm and Saturday-Sunday 10:30am-7:00pm). The two primary campus dining halls were CenterCourt and MarketPointe which had a combined total of 215 tables and 853 seats. Over an academic year, the University Food Service reported that its residential restaurants served 19,200 guests per week, 2,742 meals per day, and 639, 360 meals a year (UC Food Service Website, 2006).

**Non-produce and Produce Ordering**

The primary non-produce food items ordered were beef, chicken, pork, fish, milk, cheese, butter, fresh and frozen breads, and flour. On average, 2000 pounds of food was ordered per day and a majority of it came from all over the states (J. Hautz, personal communication, November, 2006). Milk was purchased from Louis Trauth Dairy, a full-line dairy processor located in Newport, Kentucky. Trauth Dairy purchases raw milk from the United Dairy Farmers of America, which was a national co-operation that is owned and led by dairy farmers from within 49 different states. According to the United Dairy Farmers of America’s Communication Coordinator for the Mideast Area, a majority of the raw milk that was sold to Trauth came from dairy farmers in the OKI
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region (H. Schofield, personal communication, December 21, 2006); thus, dairy was a local purchase for UC food service.

The fresh produce was supplied by Piazza Produce, a contract vendor located out of Indianapolis, Indiana. The university ordered approximately 600 pounds of various fruits and vegetables per day (J. Hautz, personal communication, November, 2006) from Piazza Produce. The produce was offered year round with fluctuations of around plus or minus 5-10% in cost.

The types of produce and quantities of produce ordered by the dining halls changed weekly according to the menu rotation. The produce was delivered by semi truck and did not come pre-cut unless specially ordered. Piazza Produce received their produce from a variety of farms all over the United States which was delivered to the distribution warehouse in Indianapolis (Personal Manager of Piazza Produce, personal communication, December 2006). The produce was purchased according to where it grew seasonally. Many of the vegetable items were purchased first in Florida, then from Georgia, then South and North Carolina, and so on continuing to follow the growing season north. Other major states from which produce was primarily purchased included California, Idaho, Texas, Wisconsin, and Washington State. During some parts of the season, produce was imported from India, Mexico, and Central America.

None of the produce sold to the UC dining halls came from local farms in the OKI region, because many of the farms were too small and did not have packaging capabilities (Personal Manager of Piazza Produce, personal communication, December 2006). There were many restrictions and regulations required by the FDA and insurance companies, which many small farms could not uphold. Piazza Produce must have a way
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to ensure the food they deliver is safe, and if a small local farm cannot guarantee the produce has been washed and packaged to meet the standards, then Piazza cannot buy their produce. Additionally, the market was driven by prices, so even if local farms could supply produce, Piazza Produce would still seek producers who can sell them their produce for the best price. “Until small local farms can guarantee their produce is safe, then it is not feasible for Piazza Produce to purchase from local farmers” (Personal Manager of Piazza Produce, personal communication, December 2006).

Kitchen Facilities

Each dining hall was equipped with its own kitchen and food preparation area (J. Hautz, personal communication, November, 2006). When food was delivered, it was kept in its original packages or cases and stored in walk in coolers and freezers. There were many kitchen island stations in each dining hall where the food was prepared. There were deep sinks available for washing fresh produce, and there were also many work surfaces, and plenty of equipment for chopping and preparing fresh produce. If needed, there was space available for new equipment such as food storage units.

Distribution/Delivery

All food orders were delivered to the University by individual suppliers (J. Hautz, personal communication, November, 2006). Each dining hall had its own delivery dock where the deliveries were made throughout the week. Produce was delivered every day, and all other deliveries were made three times a week. Almost all food was delivered by truck, and there were no special regulations or requirements for the delivery of food products. The only requirement was that deliveries must be made during the hours of operation.
Budget

The annual food budget was approximately 6 million dollars, and of this budget, approximately 35% went toward labor, 30% towards food, and the remaining 35% towards maintenance and overhead costs. The dining service was an auxiliary operation which means it must generate enough revenue to sustain itself and cover the costs of labor, food, and direct expenses. Currently, the food service was modeling the fiscal 2008 budget, which covered September 2007 until June 2008. Within this budget, the food cost, labor cost, overhead cost, and any other expenses were taken into consideration when deciding what they charge students to eat. It should also be noted that the dining service department was running a minimal surplus with their budget.

What are the current challenges faced by the Food Services Department?

A constant challenge of the UC food service department was to make sure they were operating as fiscally responsible as possible, while maintaining good quality food for the lowest prices (J. Hautz, personal communication, November, 2006). Currently, UC food service had been able to meet that challenge; compared to many other colleges, UC board rates were very competitive, especially taking into consideration the products offered.

Another challenge was to provide continuously improved products in the face of economic challenges and respond to changing trends and taste, while keeping the model balanced. The primary customers of the food service were the freshman. Each year there are between 2,500 and 3,000 brand new customers coming in with a varied set of tastes and needs. “In order to stay competitive with other schools, the UC dining service must keep the dining halls interesting” (J. Hautz, personal communication, November, 2006).
The administrators of the food service department believed that service, quality, and affordability are of greatest importance to food service customers at the institution. “The students today have higher demands. They have a wider variety of dietary styles, and, through traveling, have been exposed to a more diverse variety of foods. The dining service needs to be prepared for this.” (J. Hautz, personal communication, November, 2006). In addition, the administrators believed students want to be treated like adults and want to interact with helpful, friendly people.

With the above factors taken into consideration, the food service administrators did believe that they were providing the students/customers with what they want. This feeling of meeting customer satisfaction was corroborated in 2005 when the MarketPointe dining center was awarded the Silver Medal for outstanding menus and quality service by the National Association of College and University Food Services Loyal E. Horton Dining Award, and again in 2006 when the CenterCourt dining center was awarded the Gold Medal for the same award. The food service department administrators were very proud of the awards because here were signs of recognition from peers and they acknowledge UC’s commitment to giving customers what they want.

How does a new program get implemented in the food service department?

In order to implement a farm-to-college program, it was essential to understand the administrative protocol for the implantation of a program, specifically, a farm-to-college program, at UC. According to Hautz, since the essence of a farm-to-college program is the buying of food from local farmers, then the primary decision making responsibility for implanting the program was through Aramark because they decide what food to buy, and where it comes from. The UC food service administration grants
permission to implement a new program if they support the program, and if it in accordance with the contract between Aramark and UC (J. Hautz, personal communication, November, 2006).

What does Aramark require for the implementation of a food-to-college program? According to the Director of Board Operation for Aramark, the implementation of a farm-to-college program was contingent upon several things (S. Gravas, personal communication, January 2007). First, the program would need to be supported by their client, the UC Department of Housing and Food Services, since ultimately Aramark is here to provide their client with what they want. Next, Aramark would look at the options for where the local food would come from. Aramark had the option to buy produce from a vendor, such as Piazza Produce, or directly from the farmer, a co-op CSA. Aramark would need to obtain a price list and have a meeting with each producer to see if it an attractive offer or not. If the option was attractive, Aramark would then visit each location for site quality control to assess treatment of product, handling, and packaging of food items. Finally, once Aramark has selected who they would like to purchase from, they would need to submit this request to the regional office. To approve the new vendor, the regional office would take into consideration their clients interest in the program and the financial feasibility.

**Administration Interest/Support**

The second research sub-question asked, “Are the UC food service and campus administration interested/supportive of having more locally grown produce incorporated into the campus dining halls? As described in the literature review, “top level” administrators are very important to farm-to-college programs (Murray, 2005). The
success of numerous farm-to-college programs has been attributed to the support of food service managers. Of the seven farm-to-college programs located within the OKI region, only one was initiated by students while the other six were initiated by staff members of the dining food service and food management company. One of the suggestions for a successful implementation strategy, based on Murray’s study, included the importance of getting food service managers “bought in” to the program regardless of the food services operations type (Murray, 2005). Also, one of the primary recommendations offered by participants in the OKI regional farm-to-college programs was to get administration support and build relationships among key players.

From this information, it was assumed that it would be more likely for a farm-to-college program to be implemented at UC if the administration shows an interest in the program. For this reason, one important aspect in determining the feasibility of implementing a farm-to-college program at UC was in knowing if the UC food service administration and support staff are interested and supportive of having more locally grown produce incorporated into the campus dining halls?

To answer this question, an Administration Interest Questionnaire was administered to twelve campus executives. This questionnaire was distributed and returned via email. Of the twelve questionnaires administered, only six were completed and returned. The returned questionnaires came from the Director of Auxiliary Services, Director of Board Operations, Director of Catering, Marketing Manager Dining Services, Foodservice Director MarketPointe, and Executive Campus Chef. Of these participants, two were among the top food service administrators who have decision making power regarding food service programs; thus, their input was especially important and was more
heavily weighed in the final conclusions. No additional procedures were taken for the non-respondents. The information obtained from the completed questionnaires is described below.

**Analysis of the Questionnaire**

Of the six participants who returned the questionnaire, two did not know what a farm-to-college program is; however, all participants had heard of the term “local food” and all participants were interested in incorporating more local food in the UC dining halls (Figure 4.2).

![Farm-to-College Program at UC](image)

**Figure 4.2** Administration responses to questions about knowledge of to farm-to-college program, knowledge of the term “local” food, and interest in seeing an increased effort to incorporate more local food at UC.

All of the participants saw a variety of benefits from buying local produce (Figure 4.3). Six participants were aware of the fact that buying local produce is beneficial to the
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local economy and four participants also knew that buying local produce has a positive effect on the environment. Participants also described other benefits of having a farm-to-college program at UC: providing fresher produce, increasing the quality of dining service offerings, raising the reputation of UC thus increasing recruitment and retention of students, and promoting sustainability.

![Effects of a Farm-to-College Program](image)

**Figure 4.3** Administration responses to questions about the effects of buying local food on the economy and on the environment.

The majority of participants stated that they were interested in incorporating more locally grown produce in the dining halls, as well as be willing to restructure the menu to account for seasonal variability of goods, and pay more for the produce (Figure 4.4). Finally, two participants were actively invested in making local foods a priority at UC, three were passively invested, and only one was indifferent (Figure 4.5).

The participants believed that there were some possible barriers or challenges that could prevent UC from establishing a farm-to-college program. Almost every participant was concerned with the issue of cost, and thought the increased prices of local produce
would be a problem for the dining service budget. A second common barrier described was the ability to procure the high quantity of food required daily by the dining halls. The third most commonly suggested challenge was the ability to find a consistent local supplier.

Figure 4.4 Administration willingness to change the menu and pay more in order to incorporate more local food in the UC dining halls.

Figure 4.5 Administrative interest levels for making local foods a priority at UC.
The participants also described some things that would be required to motivate and convince the dining service administration and staff to establish a farm-to-college program at UC. The first thing would be the need to find local produce at a competitive price. Secondly, it would be important to find a local producer who could supply the quantity of produce demanded by UC and who could be consistent and trusted with delivery. There would also be the need to obtain approval from the food service company and to show that the UC community supports the program. Finally, due to the recent e-coli scares, there may also be the need for Board of Health review/approval of the local supplier.

Analysis of the Top University Administrative Support

According to Dr. Maurer, the top university administration has supported and promoted environmental sustainability on campus in two areas (Maurer, Personal communication, 2007). The first area has been a long, slow process to expand the recycling efforts on campus. They changed their opinion from, “we don’t make any money from recycling” to, “we should do that.” While the effort to promote this program has been slow, it is non-the-less supported and continues to gain more support from both administration and students.

The second area was in supporting a Sustainability Policy drafted by the University Advisory Committee on Environmental Sustainability (ESC). More details about this organization and the policy are described in next section of this chapter. According to Maurer, it was another “push up hill” to get the upper administration to support the policy, but, eventually an “administrative memo” was issued. Maurer said it will be even more challenging to get the policy actually implemented.
Results and Discussion

One of the main issues that commonly arise when dealing with environmentally sustainable programs or activities at the university is cost. Maurer stated that the upper administration’s initial thought is “at what cost,” this is especially an issue due to the recent university budget cuts. Additionally, Maurer noted that the administration is less likely to initiate programs on their own volition, and that the success of environmentally sustainable programs must come from individual departments or students. It is important that student organizations take the initiative to establish programs which, and use the Sustainability Policy, acknowledged by the administration, for support.

**Student Interest**

The third research sub-question asked, “Are UC students interested/supportive of having more locally grown produce incorporated into the campus dining halls? As previously mentioned in the literature review, student eating choices can have a large impact on the success of a farm-to-college program (Murray, 2005). While students may not necessarily need to be instrumental in the actual promotion, education or implementation of a farm-to-college program, their views as primary customers of the dining hall do have an impact on the overall program implantation.

The primary customers at the UC campus dining halls were students, specifically freshman, and it was important to provide these customers with meal options that meet their dietary choices and personal preferences, while maintaining a balanced budget (J. Hautz, *Food System Operation Questionnaire*, January, 2007). It was assumed that the dining service may be more likely to implement a farm-to-college program if the students show a strong desire to incorporate locally grown food in the dining halls. For this reason, one important aspect in determining the feasibility of implementing a Farm-to-
College program at UC was knowing how interested UC students were in having more locally grown food available in the dining halls and how invested they were at making it happen. In an attempt to gain insight to students feelings about local food, and to find out if UC students were interested/supportive of having more locally grown produce incorporated into the campus dining halls, a Student Interest for Local Foods Questionnaire was administered to UC students. The results of this questionnaire are described below.

**Survey Demographics**

The survey was administered to 135 randomly selected UC students at the CenterCourt dining hall. All 135 students who were asked to participate in the study agreed, and completed the survey. The analysis of the data indicates that all participants were undergraduates and graduation dates of the participants range from 2007 to 2012 (Figure 4.6). A majority of the students, or 50%, will graduate in 2010, followed by 30% of the students who will graduate in 2011. Based on these findings, it was assumed that a majority of the students who completed the survey were freshman who lived in dorms (Figure 4.7).

In terms of the frequency of which students ate in the dining halls, 55% of the students stated that they ate between 7 and 15 times per week (Figure 4.8). Only 1% of the students did not eat at the dining hall/ate there sporadically, 17% ate there 1 to 3 time per week, 10% ate there 4 to 6 times per week, 9% ate there 16 to 18 times per week, and 6% ate there 19 to 20 times per week. Only 1% of the participants ate the dinning halls more than 21 times per week, and only 1% of the participants did not answer the question.
Results and Discussion

Figure 4.6 Student graduation dates

Figure 4.7 Student living situation
Results and Discussion

Figure 4.8 Frequency of which students ate in the dining hall

If the dining halls did offer more locally grown produce, 36% percent of the students indicated that they would eat more frequently at the dining halls, 60% said there would be no difference, and only 4% did not answer the question (Figure 4.9).

Figure 4.9 Student responses to eating more frequently at the dining halls if more locally grown produce was offered.
Students Opinions about the Freshness of Food

A strong majority of the students felt that the freshness of their food is very important (Figure 4.10). Although a majority of students (69%) believed that UC food is fresh, they did not believe it is as fresh as it could be. The mean value for the importance of food freshness to students was 4.01, and a mean value for the freshness of UC food was 3.33. There was a significant difference (p-value of .000) between how the students felt about the importance of fresh food and how fresh they felt the food at UC was. Additionally, 76% of students believed that food from home is fresher than that served in dining halls on campus (Figure 4.11).

Figure 4.10 Importance of food freshness and perception of food freshness by students.
Results and Discussion

Comparison of Food Freshness: Home vs. School

<table>
<thead>
<tr>
<th>Response</th>
<th>Percentage of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campus food is fresher than home</td>
<td>76%</td>
</tr>
<tr>
<td>Campus food is less fresh than home</td>
<td>7%</td>
</tr>
<tr>
<td>There is no difference</td>
<td>17%</td>
</tr>
</tbody>
</table>

Figure 4.11 Comparison of how students felt about the freshness of food from home with food from the UC dining halls.

Students Opinions about Local Food

There was a close split between those participants who had heard of the term “local food” (56%), and those who had not (44%) (Figure 4.12). Although there were quite a number of student who were not familiar with the term “local food,” a majority of the participants were aware that buying local produce does have a positive effect on the local economy. There were fewer participants (47%), however, that knew that buying local produce also has a positive effect on the environment (Figure 4.13).

Figure 4.12 Comparison of student knowledge of the term “local food.”
Figure 4.13 Student responses about how buying locally grown produce affects the environment and local economy.

In terms of the awareness of local food served at UC, 82% of the participants did not know if UC dining halls served local food, 14% believed UC did serve local food, and 4% believed UC did not serve local food (Figure 4.14). Seventy-nine percent of students, however, did want to see an increased effort to incorporate more local food at UC (Figure 4.15). The difference between the number of students who were interested in seeing an increased effort to incorporate more local food at UC compared to those who not interested was statistically significant (p-value = 0.000).
Results and Discussion

Student Knowledge of Local Food Served in UC Dinning Halls

- 82% The dinning hall does serve local food
- 4% The dinning hall does not serve local food
- 14% Don't know

Figure 4.14 Comparison of student’s knowledge about local food served at UC.

Students Interest in Incorporating Local Food at UC Dinning Halls

- 79% Interested
- 21% Not Interested

Figure 4.15 Comparison of students who were interested in incorporating more local food in the UC dining hall with those who were not interested.

Not only were a majority of the students interested in seeing an increased effort to incorporate more local food at UC, but a majority of students (85%) were also willing to restructure the menu in order to use more seasonal products (Figure 4.16). The difference between number of students who were willing to restructure the menu compared to those
who were not was statistically significant (p-value = 0.000) A majority of students (59%) were also willing to pay more for local food (Figures 4.17). The number of students who were willing to pay more for local food compared to those who were not was also statistically significant (p-value = 0.000). Of those students who were willing to pay more for local food, a majority of them were only willing to pay 1-5% more (Figure 4.18).

![Willingness to Restructure the Menu](image1.png)

**Figure 4.16** Students willingness to restructure the menu in order to incorporate more local food in the UC dining hall.

![Willingness to Pay More for Local Food](image2.png)

**Figure 4.17** Students willingness to pay more for local food.
Results and Discussion

Willingness to Pay More for Local Food

<table>
<thead>
<tr>
<th>Amount</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes - No price specification</td>
<td>10%</td>
</tr>
<tr>
<td>1-5%</td>
<td>31%</td>
</tr>
<tr>
<td>5-10%</td>
<td>13%</td>
</tr>
<tr>
<td>10-15%</td>
<td>3%</td>
</tr>
<tr>
<td>More than 15%</td>
<td>1%</td>
</tr>
<tr>
<td>Would not be willing to pay more</td>
<td>41%</td>
</tr>
</tbody>
</table>

**Figure 4.18** The amount increase students were willing to pay more for local food.

While there is a great deal of support for seeing an increase of local food at UC, there seems to be less student investment in making it a priority; 19% of students are not at all invested, 47% are indifferent, 28% are passively interested, and only 5% are actively interested (Figure 4.19).

**Figure 4.19** Level of investment students had for making local foods a priority at UC.
Results and Discussion

**Student Campus Environmental Organizations**

There were currently two active campus environmental organizations at UC at the time of this study: Leaders for Environmental Awareness (LEAP), and University Advisory Committee on Environmental Sustainability (ESC) (Eric Maurer, personal communication, January 2007). LEAP was originally called Environmental Students for Awareness, Volunteering and Education (E-Save), which was established in 2001. In 2004 the group transitioned to LEAP and is known as the primary student environmental organization on campus. LEAP aimed to promote environmental awareness and protection both on campus and in the community. They tried to accomplish through “creating alliances and uniting student leaders with diverse backgrounds, interests, and talents with faculty and local environmental organizations in the greater Cincinnati area” (University of Cincinnati Webpage, 2006).

LEAP had been primarily involved in recycling activities on campus. Other than promoting organic food one day during a week long celebration of Earth Day in 2004, LEAP was not involved in any local food initiatives. There had been some talk of promoting local food in the past, but nothing evolved out of the discussion (E. Maurer, personal communication, January, 2007).

ESC, was comprised of administration from all the major service divisions, faculty from multiple colleges within UC, and both undergraduate and graduate students (E. Maurer, personal communication, January, 2007). This organization was created because a few students, who were involved with E-Save, wanted to promote environmental sustainability at the university level. ESC aimed to make the university holistically more sustainable. They were trying to accomplish this by promoting
Results and Discussion

sustainable programs and projects undertaken by the University as well as act as a focal point for information for all sustainable programs and projects undertaken by the University. Finally they aimed to assess how the University affected the local and regional community in regards to the environment.

From 2003 to 2004, the soul activity and purpose of the organization was to draft a Sustainability Policy for the university. Despite the slow, frustrating start, the proposal was approved and an “administrative memo” was issues on the subject in January 2005 (E. Maurer, personal communication, January, 2007). Unfortunately, since the memo was signed, there had not been much progress in terms of the implementing projects to promote the new policy.

According to Dr. Maurer, many of the student environmental groups at UC had only focused on small projects in the past. Much of this was due to the lack of time that students had to dedicate to larger programs. Many students were interested in promoting projects but did not have time to research information about a particular project.

It should also be noted that since the interview with Dr. Maurer, several student from the ESC committee have expressed direct interest in obtaining the results of this feasibility study in order to promote the implementation of the farm-to-school program it is feasible.
CHAPTER 5
CONCLUSION AND RECOMMENDATIONS

Some of the major issues concerning environmental planners today are impacted by the modern system of food production, distribution, and consumption. One major contributing factor to this relationship is movement away from traditional food systems. With the rise of technology and innovative agriculture methods, production rates rapidly increased, and with time the advancement of technology globalized the food distribution system. Fresh produce, which once traveled from the backyard/field to the kitchen table, now travels thousands of miles before it reaches the table.

Unfortunately, these advancements in agricultural were not achieved without ecological and socio-economic consequences. As a result, the US food system, from field to table, is in need of a change. A paradigm shift is occurring in agriculture; one that emphasizes concepts of sustainability instead of increases in production. One method of promoting sustainability is to implement alternative, more sustainable food systems, such as a farm-to-cafeteria program.

The motivation for writing this thesis was the need for more environmentally sustainable food systems. The purpose of this thesis was to determine the feasibility of implementing a farm-to-college program with regard to the on-campus areas of focus (food service operation, administration support, and student support) at the University of Cincinnati’s main campus dining facilities. The results of this feasibility study were based on the answering three sub-questions: 1) Can a farm-to-college program be incorporated into the current UC food service operation and logistical structure?; 2) Are the UC food service and campus administration interested/supportive of having more
locally grown produce incorporated into the campus dining halls?; and 3) Are UC students interested/supportive of having more locally grown produce incorporated into the campus dining halls? Analysis of the data provided the following conclusion.

**Food Service Operation**

The first research question asked, “Can a farm-to-college program be incorporated into the current UC food service operation and logistical structure?” To answer this question, several types of data were collected: administrative structure and management protocols, assessments of dining hall facilities and equipment, and procedures for ordering and preparing meals.

As previously discussed in the literature review, one of the key factors in determining the implementation and success of a farm-to-college program is how the food service is managed. The literature suggested that food system initiatives are more likely to succeed if the food service management is self-managed or college-operated compared to those that are contract-managed operations (Johnson & Stevenson, 1998). This is because college-operated food services have more autonomy to establish and maintain relationships with local vendors as opposed to contract managed counterparts.

Despite the fact that UC was contract-managed, the data does show that Aramark has the option to select who they buy produce from, and thus would also be able to establish and maintain relationships with local vendors if need be. At the time of the study, Aramark bought produce through Piazza Produce, but had not contract with them and could change distributors at any time. Other possibilities for distributors included Queensgate Foodservice, Delhi Foods, Pic’s Produce, Reinhart Foodservice, and Fresh Cuts. Of these distributors, Pic’s Produce and Delhi Foods sell local produce (S. Gravas,
Conclusion and Recommendations

personal communication, January 2007). Aramark recently considered changing distributors and interviewed with a few. Unfortunately, Pic’s produce was too small of a company to work with, but Delhi Foods was up for consideration.

In addition to buying local produce directly from farmers, the other main challenge of incorporating a farm-to-college program at UC was keeping costs within the budget. There can be no more than a than a 10% fluctuation in food purchasing throughout the whole year (S. Gravas, personal communication, January 2007).

Aside from these challenges, taking into consideration other factors of the UC food service logistics and operations as discussed in the literature review, the data shows that the UC food service system could support the implementation of a farm-to-college program. Each dining hall kitchen had the necessary equipment and labor to handle, store, prep, and cook fresh raw fruits and vegetables. Each dining hall also had its own delivery dock where local produce could be delivered, and there were no specific restrictions against individual farmers or distributors delivering produce. The dining hall was focused on providing the customers with quality food, promoting healthy menu options, and adapting to divers diet styles of new students, which are all benefits of a farm-to-college program. Additionally, the dining halls offered a marche’ style dining facility, which opened up the possibility of utilizing more local foods.

Administration Support/Interest

The second research question asked, “Are the UC food service and campus administration interested/supportive of having more locally grown produce incorporated into the campus dining halls? To answer this questions several types of data were collected: administration knowledge about local food and farm-to-college programs,
interest and investment level of food service administrators to incorporate more local food in the dining halls, and methods by which top level campus administrators have supported campus environmental sustainability.

Information provided by participants from other nationwide farm-to-college programs, emphasized the importance of top level administrators for the establishment of the program. Much of the recorded success of these programs has been attributed to the support of campus administration, especially those within the food service department. Despite the previous slow movement by the UC upper administrative officials to promote environmentally sustainable programs on campus, there was nonetheless, a movement in that direction. Also, the passing of the Sustainability Policy provided additional support for the incorporation of a local food initiative on campus. Not only was there support from an established university policy, but also from ESC, which had assumed the responsibility of acting as a focal point for information for all sustainable programs and projects undertaken by the university.

While the upper administrative officials would most likely be supportive of the farm-to-college program, it is likely that they would be less inclined to initiate it. The feasibility, therefore, of implementing a farm-to-college program at UC would be highly dependent on finding students or other department administrative personnel to lead the effort.

With respect to the food service department administration, the data showed strong support for the incorporation of more local food in the UC dining hall. The data revealed that the dining service administration were interested in incorporating more local food into the dining halls, and that they were willing to restructure the menu and pay
more a little more for local food. In addition to benefiting the local economy and environment, the food service administrators also felt that incorporating local food into the menus could produce a variety of benefits for the university as a whole.

The key factors of concern for the food service administration, which could prevent the establishment of a farm-to-college program at UC, were higher costs of local produce (beyond what the budget can accommodate), a reliable distributor for the local food, and a distributor who could supply the high quantity demand of food. If these challenges could be met, then the evidence shows that it would be feasible to incorporate a farm-to-college program at UC with regard to the administration support and interest. Additional research is needed to determine if a there is a distributor who can meet Aramark’s requirements; if so, these challenges would be overcome.

**Student Support/Interest**

The third research question asked, “Are UC students interested/supportive of having more locally grown produce incorporated into the campus dining halls? To answer this questions several types of data were collected: student knowledge about local food and farm-to-college programs, student interest and investment levels of incorporating more local food in the dining halls, and campus student environmental group initiatives.

The results of the student survey corroborated Hautz’s statement that a majority of UC dining hall customers were freshman. In general, the students felt that food freshness is important and that the UC dining halls could improve their level of food freshness. Although not all students had heard of the term local food, many of them did know that buying local produce benefits both the local economy and the environment. The lack of knowledge about the term “local food” does not necessarily mean the students were not
familiar with the concept. The term local food is a term most commonly used by people involved with farm-to-institution programs and are familiar with the terminology. The results of the survey could have been different if an alternative term was used, or the concept was described for the statement.

Despite the fact that 47% of students reported to be indifferent in their actual level of investment for incorporating local food, a strong majority of students, or 79%, indicated that they would like to see an increased effort to incorporate local food in the UC dining halls. In light of Dr. Maurer comments, the lower level of investment may have been attributed to the lack of knowledge, resources, or time that students have to invest in seeing the change take place.

Not only did the students express an interest in having more local food (79%), but a majority of students (85%) were also willing to restructure the menu and pay more (59%) for local food. Finally, the incorporation of local food could potentially increase the frequency of students eating at the dining halls because 36% of students said they would eat there more frequently if more local food was incorporated into the menu.

If the implantation of a farm-to-college program is first and foremost dependent on having support from the UC food service administration, and the goal of the food service department is to provide its customers with quality food while adapting to diverse dietary styles and personal preferences, then the results of this student survey show that the food service department would be inclined to support a farm-to-college program. Implementing a farm-to-college program would be feasible because it would not only improve the freshness of the food, but it would also make the primary customers more satisfied. If purchasing local food would be more expensive, which it may or may not be,
then students would be willing to pay more, which would eliminate associated budgetary problems.

The student environmental organizations could be potential champions for the program since both organizations are actively involved in promoting environmental sustainability on campus. Additionally, since the initiation of this thesis, several members of ESC have expressed interest in working to implement this program. The challenge of not having time to do research about a farm-to-college program could be eliminated by using the data in this thesis to provide them with the needed information for implantation.

If the organization would not be willing to invest time in helping implement the program, this would not mean that the program would not be feasible. Research has shown that the start up of some local food programs was dependent on students, while other successful programs had little student involvement (Murray, 2005). Students can have a passive role, such as simply expressing their interest in incorporating more local food, or a more active role including promotional outreach for program, research on the availability of local products, and coordinating purchase or delivery of product. In programs where students did not play a major role, the advocacy came primarily from the administration. If the UC administration was more active in promoting and implementing the farm-to-college program, as a result of the high student interest in the program, then it would be feasible to implement a farm-to-college program at UC.

**Final Conclusion**

The data collected in this study showed that the UC food service operation and logistical structure would support a farm-to-college program as long as the contracted
food service company could find a local food distributor that offers competitive prices, meets food safety regulations, supply the high quantity of product demand, and provide reliable delivery of goods. Additionally, the UC food service department administrators and students were interested and supportive of having more locally grown produce incorporated into the campus dining halls. This information provides evidence to support the claim that it would be feasible to implement a farm-to-college program, with regard to the on-campus areas of focus, at the University of Cincinnati’s main campus dining facilities.

**Recommendations**

The information provided by this feasibility study, has indicated that the food service operation and logistical structure would support a farm-to-college program if they could find a distributor who could, at minimum, incorporate local produce at a competitive price, provide reliable and trustable delivery, and could supply the high food quantity demanded by each dinning hall. Therefore more research is needed about the off-campus areas of focus: the suppliers of local food products including conventional distributors and farmers.

**How to Procure Local Food**

As mentioned in the literature review, there are two options for procuring local food, from a distributor or from a farmer. Buying local produce from a distributor would be the easiest approach for a large university to incorporating local produce (Rimkus, Jones, & Ona, 2004). The benefit of this approach is that the school would continue working within a preexisting infrastructure that includes an easy ordering system, refrigeration, trucks, and the flexible delivery times.
The other option of Aramark buying local produce directly from farmers, co-operations, or CSA’s, is also possible, but does present more challenges. Farmers would need to sell their produce at an affordable price, be able meet the quantity demand of UC, meet all FDA regulations, and deliver the produce. As noted in the literature review, buying directly from the farmers would also require Aramark to establish a good, strong relationship with farmers. The farmers would need to be able to guarantee that UC would get the quantity and quality of produce they asked for when they need it. In order to determine what supply options are available, the following steps should be taken.

Determining Local

A local food initiative such as a farm-to-college program requires the university to buy local produce; thus, it is important to investigate possible sources of local food. It is also important to have some basic background information about the local farmers to help advise the food service staff on where to start (Oxfam America 2002, 18). In order to determine what local distributors are available, it is necessary to first define the term local.

A good method of defining the term local would be to do so in relation to the goals intended to be achieved through the implementation of a farm-to-college program. Another way to define the term local could be to base the definition off of other successfully established programs. Descriptions of all current farm-to-college programs within the U.S. and Canada are available from the Community Food Security Coalition, Farmtocollege Webpage (2006). According to this data, the definition of local has been divided into four primary distances from the college campus: 50 miles or less, 50-200 miles, state-wide, and region-wide. The data shows that, the majority of programs, or
44% buy locally grown produce within 50-200 miles from their campus (Figure 5.1). The number of programs that buy produce from within 50 miles or less (22%) was similar to those that purchase from farmers located state-wide (20%). Only 11% of the programs purchase food from within a region-wide boundary, while the remaining 4% do not know where the majority of their produce came from.

Figure 5.1 A breakdown, by percentage, of the distances from which current farm-to-college programs purchase locally grown produce.

The overarching goals for the implantation of a farm-to-college program at UC, as intended for this feasibility study, would be to support the local economy, supply fresher/healthier tasting food, create a market for local farmers, and promote sustainability with the environment through reducing the fossil fuel consumption in transporting and processing food, and reducing the amount of waste from packaging materials. In relation to these overarching goals, the term local would need to be defined in such a way as to include potential suppliers that were located close enough to the UC
to ensure lowered total food miles than the current system, decreased fossil fuel consumption, and a reduction in the need for packaging and processing. Ideally, the best local food imitative, in relation to distance, would be within a 50 mile radius from the college. Unfortunately, due to the paucity of farmers around the UC campus, this definition of local is not obtainable; therefore, it is necessary to consider the possible distance.

According to the data above, the next possible distance includes an area located within 50-200 miles of the school. At this distance, the term local would not only be defined in a similar manner as a majority of all other farm-to-school programs, but would also create an area in which the overarching goals of the program could be met. Thus it is recommended that a farm-to-college program implemented at UC should define the term local as the area contained within a 50-200 miles radius from UC’s main campus.

As a way to visually define this term, a map has been created using the concentric ring model to visually define the local boundary with the University of Cincinnati at the center (Figure 5.2). The design of the map was modeled after a similar map presented in Grinnell College study (Bradley-Cook, et al, 2006). In the UC model, there are two concentric rings surrounding Cincinnati defining the potential source of local produce. The first ring includes Cincinnati and the surrounding counties within a 50 mile radius, and the second ring includes Cincinnati and the surrounding counties within a 200 mile radius. As shown in the map, a 200 mile radius around UC includes almost all of the states of Ohio, Indiana, and Kentucky; an area also known as the Ohio, Kentucky, Indiana (OKI) region.
Two Levels of Local

1) University of Cincinnati and surrounding counties within 50 miles.

2) University of Cincinnati and surrounding counties within 200 miles.

Figure 5.2 Concentric ring model and two-tiered definition of local for a potential farm-to-college program at the University of Cincinnati.

Determining Local what food to Incorporate into the Farm-to-College Program

According to the literature about food-to-college program implementation, the chances of successfully implementing a new program are increased when the initial
incorporation are small. For this reason, it is recommended that a farm-to-college program at UC begin by incorporating only a few select food items such as apples or tomatoes, especially if they decide to procure the food directly from farmers, as opposed to a commercial distributor. Since UC currently receives local dairy products, one type of food item to consider would be produce such as fruits and vegetables.

Knowing that UC requires a large volume of produce, the choice of food items selected for a farm-to-college program should be based upon those that are commonly grown within the locally defined area (the OKI region). The rational behind choosing fruits and vegetables that are commonly grown in this area, is that there is a better chance of finding farms that supply the needed large quantity of those particular items. According representatives from the state agriculture departments within the OKI region, the most commonly grown fruits and vegetables in the OKI region are apples, tomatoes, potatoes, bell peppers, greens (lettuce, kale, etc.), summer squash, radishes, and sweet corn (L. Panda, Ohio Proud Coordinator, & J. Eaton, Kentucky Department of Agriculture, personal communication, December 2006).

In order to make the final selection of items to incorporate into an initial farm-to-college program, a list of commonly grown produce should be compared to a UC produce ordering sheet to see what items matched up. Those items that do match up would become the “priority food items.”

Once the items have been selected, the next step is to find out how much of each item is generally purchased by UC, during the time of which that produce item is seasonally available, and at price does UC pay for each item. This information will be used to compare the price of produce for different suppliers, and to determine if those
prices fit within the current UC budget. Using information taken from this thesis study, provided by Gravas, a chart of priority food items including the cost and amount ordered by UC has been created and presented below (Table 5.1).

**Locating Local Producers**

The next step of the research would be to find either a commercial distributors or farmers who can offer the priority food items from farms located within the OKI region. In light of the advantages of buying local produce from a commercial distributor, it would be most logical to investigate this possibility first. The information provided by this study has indicated that there are two distributors, Pic’s Produce and Delhi Foods, that sell local produce. It is recommended that these distributors are contacted to see if they could meet the requirements listed by the food service administration.

If this option is not viable, the second option will be to locate and contact farmers directly. Due to the large quantity of priority food items needed by the UC dining service, it is recommended to narrow the search by looking for local producers who could provide larger quantities of selected produce. This includes whole-sale farmers, and producers who were involved with CSA’s, farmers markets, and co-operatives. Methods by which local producers can be located, as described in the literature review, include: contacting local extension faculty and specialists, farmer’s markets representatives, or other farm-to-college program directors from within the OKI region.
### Table 5.1 Description of prices and quantity of priority food items selected for a potential farm-to-college program at UC

<table>
<thead>
<tr>
<th>Item</th>
<th>May</th>
<th></th>
<th>June</th>
<th></th>
<th>July</th>
<th></th>
<th>August</th>
<th></th>
<th>September (10 opening days)</th>
<th></th>
<th>October</th>
<th></th>
<th>November</th>
<th></th>
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</thead>
<tbody>
<tr>
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<td>40</td>
<td>22.25</td>
<td>40</td>
<td>22.25</td>
<td>36</td>
<td>17.25</td>
<td>16</td>
<td>21.05</td>
<td>15</td>
<td>19.95</td>
<td>45</td>
<td>23.45</td>
<td>45</td>
</tr>
<tr>
<td>Cantaloupe 5-6ct/cs</td>
<td>15.05</td>
<td>40</td>
<td>17.30</td>
<td>40</td>
<td>12.65</td>
<td>36</td>
<td>14.70</td>
<td>16</td>
<td>13.35</td>
<td>15</td>
<td>14.25</td>
<td>45</td>
<td>16.25</td>
<td>45</td>
</tr>
<tr>
<td>Apples Red 125ct/cs</td>
<td>21.05</td>
<td>70</td>
<td>21.05</td>
<td>70</td>
<td>21.05</td>
<td>60</td>
<td>27.5</td>
<td>20</td>
<td>24.25</td>
<td>20</td>
<td>22</td>
<td>80</td>
<td>19.5</td>
<td>80</td>
</tr>
<tr>
<td>Tomatoes 6X6 bulk 25#/cs</td>
<td>?</td>
<td>30</td>
<td>15.7</td>
<td>30</td>
<td>15.9</td>
<td>25</td>
<td>18.65</td>
<td>10</td>
<td>16.25</td>
<td>10</td>
<td>13.25</td>
<td>40</td>
<td>14.50</td>
<td>40</td>
</tr>
<tr>
<td>Red/Green Bell Peppers 253/cs (average combined price)</td>
<td>15.55</td>
<td>40</td>
<td>20</td>
<td>40</td>
<td>18.5</td>
<td>35</td>
<td>22</td>
<td>15</td>
<td>20</td>
<td>12</td>
<td>21</td>
<td>50</td>
<td>23</td>
<td>50</td>
</tr>
<tr>
<td>Lettuce Leaf Green</td>
<td>31.9</td>
<td>10</td>
<td>14.40</td>
<td>10</td>
<td>14.40</td>
<td>6</td>
<td>15.35</td>
<td>6</td>
<td>15.35</td>
<td>4</td>
<td>14.75</td>
<td>15</td>
<td>14.25</td>
<td>15</td>
</tr>
<tr>
<td>Lettuce Iceberg Head 24ct/cs</td>
<td>15.75</td>
<td>20</td>
<td>15.85</td>
<td>20</td>
<td>15.85</td>
<td>15</td>
<td>18.10</td>
<td>10</td>
<td>16.25</td>
<td>8</td>
<td>15.75</td>
<td>40</td>
<td>15.25</td>
<td>40</td>
</tr>
</tbody>
</table>
Conclusion and Recommendations

Also a very good resource for find farmers' markets, family farms, and other sources of sustainably grown food in a particular area is the Local Harvest website (www.localharvest.org).

Contacting the Producers

Once the farmers are located, the next step would be to contact each producer to assess their operations and their interest in participating in a farm-to-college program at UC. It would be important to find farmers who could meet the needs and requirements of a distributor, specified by Gravas according to Aramark regulations. An example *Producer Questionnaire* has been provided at the end of this chapter (Appendix G) which could be used to collect this important information. The format and questions used in the questionnaire were primarily taken from a producer questionnaires used in the Grinnell College local food study (Bradley-Bradley-Cook et al., 2006).

On important thing to note, in contacting farmers, is that many of them are older and not familiar with participating in research studies or have access to a variety of commonly used technology used for data collection. For this reason, it is recommend that an initial phone call be made to carefully, and clearly explain the purpose of the phone call and they study. The best method of obtaining the information may be through a phone conversation where the researcher asks the farmer the pre-determined questions. It is very likely that many farmers will not have access or knowledge to answering a questionnaire by email. Some farmers may even ask that the questionnaire be sent to them by postal mail. One last note, is that the best time to conduct this aspect of the research is during the winter months, when farmers are the least busy.
Sharing the Data with the Food Service Administration

Once all of the information has been collected, it is recommended that a chart be constructed to show the comparison of prices for the local food with the current food purchased by the UC dining hall. Since a challenge or barrier of implementing a farm-to-college program is cost, this chart will provide important information to help the food service administration make a decision about whether or not it would be feasible to implement a farm-to-college program with respect to the budget.

Additionally, it would be important to provide the Director of Board Operations for Aramark information regarding the delivery and distribution abilities of the potential producers. One of the requirements of incorporating more local food into the UC dining service, is that the local food must be delivered to UC by an outside source, and the deliverer must be dependable, and trustworthy. Assuming the cost of the produce fits within the budget, an adequate quantity can be supplied, and the produce can be delivered to UC, then it would be left up to the Aramark administration to further investigate the farm facilities to ensure food safety regulations are met. From this point, the final decision to implement a farm-to-college program would be left up to the top administrators from the Mid-Atlantic Region, Gravas, and the top administrators for the UC food service department. They would most likely look at all the factors of consideration described in this thesis and additional research, before making their final decision.

Regardless of the results, it is important to keep in mind that a farm-to-college program can be designed in a variety of ways. Programs can be as simple as purchasing local apples to sell at a snack table in a campus lounge, or as complex as incorporating a
Conclusion and Recommendations

variety of locally grown produce into the meals served in campus dining halls. It is crucial to remember that there is no single design for a farm-to-college program because all programs is adapted to the needs and resources of the institution. The most important thing to be aware of is that the current food system is creating a multitude of negative environmental and socio-economic impacts, thus, there is a need to for a more sustainable system.
REFERENCES


Appendix


Appendix


Appendix


Appendix

APPENDIX A

University of Cincinnati Food Service System Operation Questionnaire

The development of this questionnaire was primarily based on information taken from The San Francisco Farm-to-School Report: Results from the 2003 Feasibility Study.

Administration/Operation

1. Who coordinates meal programs for the university? (Break down of managers/directors, etc)
2. How is the food service operation managed (Self-operated where the member of the department deals with vendor directly to get food; or contract operated, here a provider like Aramark, handles most orders, etc).
3. How is the food ordered (through vendors…what vendors do you use)?
4. Do you have contracts with vendors?
5. Who ensures safe handling, storage, preparation of all food and meals?
6. What is the mission of the department?

Meal Locations, Times and, Quantity

1. Where are meals served (including events, fundraisers, vending machines, etc)?
2. When are meals served?
3. Throughout the school year, how many meals are served (breakfast, lunch, dinner, other)

Meal Plans and Prices

1. What types of meal plans are there? (Board, A la carte, other)
2. How much do meals cost?

Menus

1. What menu options are there?
2. Do they need to comply with any regulations from the U.S. Department of Agriculture or any other Federal/State/University regulation?
3. Do you offer a salad bar option?
Non-produce food items (meat, dairy, breads, flour, etc).

1. What are the primary food items ordered (list)
2. On average how much is ordered?
3. What is the cost for each item?
4. Where does each item come from (city, state)
   - Are there and items that are currently from local sources?

Produce Ordering

1. Do you have a produce contract? Who with?
2. What are the primary food items ordered (list)
3. On average how much is ordered?
4. What is the cost for each item?
5. Does the price remain the same or change (how often does it change)
6. Where does each item come from (city, state)
7. Is the produce pre-cut?
8. Is produce offered year round?
9. Do you have any standing orders or do items and quantities change weekly?
10. Where does a majority of the produce come from (city, states)
    - Are there and items that are currently from local sources?

Kitchen facilities

1. How is food stored?
2. Where is food prepared?
3. Are there surfaces and equipment for chopping and preparing fresh produce?
4. Are there deep sinks for washing fresh produce?
5. Is there space available for new equipment such as food storage units if needed?
Appendix

Labor
1. What percent of the food budget goes to labor?
2. How many people (total) work for the food service?
   a. How many people work in administration?
   b. How many people are needed to prepare meals
   c. How many people are needed to serve meals
3. Does the food service staff have to pass the National Safety Exam to ensure food safety?
4. Are cooks managers and cooks SERVSAFE Certified?
5. What are the skills of the staff?

Distribution/Delivery
1. Who delivers food, ingredients and other products?
2. When are deliveries made (day, time, how often)?
3. Where are deliveries made?
4. What are the regulations about deliveries made to the university? Can these be changed if needed to accommodate a new program?

Marketing
1. How do you market your meals?

Waste/Recycling/Composting
1. Who handles waste management
2. Who provides garbage cans
3. Who empties and expenses with the garbage
4. Are there bins for recycling?
   a. What is recycled (do you include green bins)
   b. Is anything composted?
5. Is there a lot of food waste?
6. What happens to food that remains after it is prepared and served (leftovers)?
Appendix

Budget

1. What is the annual budget
2. Are there any requirements (required to generate a specific revenue to sustain themselves)
3. Where does the revenue come from (federal or state reimbursement, students, university employees, and from a la carte sales in other locations of the school, vending machine sales, etc)?
4. Do you receive any USDA reimbursement, Federal reimbursement, or State reimbursement?
5. Do you receive any government commodities such as meat, cheese, canned vegetables, etc?
6. What is the average cost (per year) of
   a. Labor
   b. Food
   c. Transportation
APPENDIX B

Readiness Assessment Questionnaire

This questionnaire has been modeled after the *Farm-to-School/School District Readiness Assessment Checklist from the Crunch Lunch Manual, 2003*, by Brillinger, Ohmart, and Gail. It also includes questions recommended by *Farm-to-cafeteria connections: marketing opportunities for small farms in Washington State, 2004*, by Sanger and Zenz.

History and Context of the Food Services Department

1. Does the University have a history of incorporating local food into its meal plans?
2. Have any other similar (local food initiatives) efforts been initiated on campus? If so, what happened?
3. What are the current challenges faced by the Food Services Department?
4. Over what decisions does the Food Service Director have independent authority?
5. Is the food service department focused on promoting health food? How is this currently being done?
6. What is important to the food service customers at the institution?
7. Is food service providing what students/customers want?

School Community Context

1. Is there any philosophical, practical, and demonstrated support for farm-to-school programs (or other local food initiatives) from the food service department?
2. Are there any school gardens, cooking classes, nutritional education, or environmental education?

Financial

1. What is the financial standing of the Food Services Department? Is it running a deficit or surplus budget?
2. Most universities maintain a target percentage for food expenses and labor costs as a marker for fiscal performance, and these can be used to consider the financial viability of new farm-to-school programs. What is the universities’ target for labor and food costs?
3. Are there other income sources for the Food Services Department?
4. What are the grant funding and local fundraising opportunities available to the university? Does the university have a grant write/seeker on staff who could put his/her resources to a project like this?
Appendix

**Labor**

1. According to the Food Services Director, are the Food Service Department’s day-to-day personnel resources adequate to meet the current demands of the Department?

2. Is there adequate staffing in the Food Services office (secretarial work, director, managers at various levels, accounting services, etc)?

3. Is there a nutrition education specialist in any department in the university? If so, so they make any educational linkages between the meal offerings and the curriculum?
APPENDIX C

Questionnaire for Distributors

This form was taken from *Local Food and Grinnell College Dining Services: A report from the Group Independent Study, Spring 2006, by Bradley-Cook, et al*, and adapted for the University of Cincinnati Farm-to-College program feasibility study.

**Questions for Distributors**

1. Where is the food we receive at the University of Cincinnati distributed from (city, state)?
2. Where are the producers located?
3. What are the food processors (any and all intermediate steps between production and distribution)?
4. What is the mode of transportation for the products between each of these locations?
5. Do the producers you buy from change with the seasons?
6. Does any of your produce come from local farms (in the OKI region or Midwest)?
APPENDIX D

Administrative Staff Interest for Local Foods Questionnaire

Many of the questions for this questionnaire were taken from *Local Food and Grinnell College Dining Services: A report from the Group Independent Study, Spring 2006, by Bradley-Cook, et al,* and adapted for the University of Cincinnati Farm-to-College program feasibility study.

**By filling out this questionnaire and returning the completed survey to me, you are providing your consent to participate in this study.**

1. How many meals a week do you eat at the dining hall?
   - None
   - 1 – 3
   - 4 – 6
   - 7 – 9
   - 10 – 12
   - 13 – 15
   - More than 15

2. Have you heard the phrase 'local food'?
   - Yes
   - No

3. If given the opportunity, do you purchase local food?
   - Yes
   - No
   - Sometimes

4. In what way does buying locally produced / raised food affect the environment?

5. In what way does buying locally produced / raised food impact the local economy?

6. How does the food at UC differ from the food you eat at home in terms of freshness, nutrition and distance traveled?

7. Does the dining hall serve local food?
   - Yes
   - No
   - Do not know
8. Do you think you would eat more frequently at the dining service if you were offered more locally grown food?
   Yes
   No
   There would be no change

9. Do you know what a farm-to-college program is?
   Yes
   No

10. Would you like to see an increased effort to incorporate more local food at UC?
    Yes
    No

11. How invested are you in terms of making local foods a priority at UC?
    Not at all
    Indifferent
    Passively invested
    Actively invested

12. Eating locally implies eating seasonally. Would you be willing to restructure the menu in order to use more seasonal products, perhaps increasing menu flexibility?
    Yes
    No

13. Sometimes local food costs more. Would you be willing to pay more for the dining plan to include more local food, and if so, how much more?
    I would not be willing to pay more.
    1-5%
    5-10%
    10-15%
    more than 15%
    I would not be willing to pay more

14. What types of barriers or challenges do you think could possibly prevent UC Dining Service from establishing a farm-to-college program
15. Do you believe there would be any benefit to establishing a farm-to-college program at UC? This program would involve the UC dining hall to purchase fresh food from local farmers. Please describe any these benefits.

16. What would it take to motivate and convince the dining service to establish a farm-to-college program at UC? (This program can be as small as only buying locally grown food only for a salad bar, to buying food to make primary meals).

Thank you for your participation!
APPENDIX E

Student Interest for Local Foods Questionnaire

This survey was taken from *Local Food and Grinnell College Dining Services: A report from the Group Independent Study, Spring 2006, by Bradley-Cook, et al*, and adapted for the University of Cincinnati Farm-to-College program feasibility study.

By filling out this survey and returning the completed survey to me, you are providing your consent to participate in this study.

1. Are you a/an
   - Undergraduate student
   - Graduate student

2. What is your class year (when will you graduate)?
   - '07
   - '08
   - '09
   - '10
   - Other _______

3. How many meals a week do you eat at the dining hall?
   - None
   - 1 – 3
   - 4 – 6
   - 7 – 9
   - 10 – 12
   - 13 – 15
   - 16 – 18
   - 19 – 21
   - more than 21

4. Do you live in the dorms on campus?
   - Yes
   - No

5. How would you best describe the area where you grew up?
   - Urban
   - Suburban
   - Small town
   - Rural
6. Evaluate the following on a scale 1-5 or no answer: (1 = minimally & 5 = a great deal)  Please check the box that best fits your opinion.

<table>
<thead>
<tr>
<th></th>
<th>1 Minimally</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5 A great deal</th>
<th>No Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>How much do you think about the <em>where</em> the food in the dining hall is produced?</td>
<td></td>
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<tr>
<td>How much do you think about the <em>how</em> the food in the dining hall is produced?</td>
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<tr>
<td>How important is the freshness (i.e. how far your food travels from farm to table) of your food?</td>
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<tr>
<td>How fresh do you believe the produce and dairy products at UC are?</td>
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<tr>
<td>How much do you think about the nutritional value of your food?</td>
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<tr>
<td>How much do you think freshness affects nutritional value?</td>
<td></td>
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</tbody>
</table>

7. Have you heard the phrase 'local food?'
   Yes
   No

8. If given the opportunity, do you purchase local food?
   Yes
   No
   Sometimes

9. To what degree do you believe that buying locally produced / raised food affects the environment?
   It has no affect
   It helps protect and sustain the environment in a positive way
   It negatively affects the environment.
   I don’t know
10. To what degree do you believe that buying locally produced / raised food impact the local economy?
   - It has no affect
   - It benefits the local economy
   - It negatively affects the local economy
   - I don’t know

11. Does the dining hall serve local food?
   - Yes
   - No
   - Do not know

12. How does the food on campus differ from the food you eat at home in terms of freshness?
   - Campus food is fresher than food from home
   - Campus food is less fresh than food from home
   - There is no difference

13. How does the food on campus differ from the food you eat at home in terms of nutrition?
   - Campus food is more nutritious than food from home
   - Campus food is less nutrition than food from home
   - There is no difference

14. Eating locally implies eating seasonally. Would you be willing to restructure the menu in order to use more seasonal products, perhaps increasing menu flexibility?
   - Yes
   - No

15. Sometimes local food costs more. Would you be willing to pay more for the dining plan to include more local food, and if so, how much more?
   - I would not be willing to pay more.
   - 1-5%
   - 5-10%
   - 10-15%
   - more than 15%
   - I would not be willing to pay more
16. Do you think you would eat more frequently at the dining service if you were offered more locally grown food?
   Yes
   No
   No difference

17. Would you like to see an increased effort to incorporate more local food at UC?
   Yes
   No

18. How invested are you in terms of making local foods a priority at UC?
   Not at all
   Indifferent
   Passively invested
   Actively invested

Thank you for your participation!
APPENDIX F

Interview Guide:
Administration & Student Support for Campus Environmental Initiatives

1. Describe your background/history at UC.

2. What has the administration done to support/promoted environmental sustainability on campus?

3. What have students done to support/promoted environmental sustainability on campus?

4. What direction will UC go in the future in regards to environmental sustainability?
APPENDIX G

Questionnaire for Local Producers

This questionnaire was primarily modeled after Producer Questionnaire from *Local Food and Grinnell College Dining Services: A report from the Group Independent Study, Spring 2006, by Bradley-Cook, et al.* It also includes questions recommended in the *Buy Local food and Farm Kit: A Guide for Student Organizers, 2006, by Oxfam America.* It has been adapted for the University of Cincinnati Farm-to-College program feasibility study.

By filling out this survey and returning the completed survey to me, you are providing your consent to participate in this study.

**Current Operation Questions**

1. What does your farm produce?
2. How long have you produced this crop?
3. How much do you produce?
4. What are your prices?
5. What goods are in season at what times?
6. Do you collaborate with any other local producers (Co-Ops or CSA’s)?
7. Do you work with a locker/processor/distributor?
8. Do you process your products in anyway before selling them?
9. Do you raise GMO products?
10. Do you use organic methods?
11. Have you sought organic certification?
12. Have you sold to institutions in the past?
13. Do you have liability insurance?

**Future Interest Questions**

1. Would you be willing/able to sell your products to a local institution like the University of Cincinnati?
2. Can you offer value-added products (washed and peeled produce)?
3. Would you be willing to help sort, clean or process your products?
4. Would you be able help deliver products to the college?
5. What are your thoughts about marketing agreements/contracts with the college?