Correlating the urban agricultural and academic success. A research project to examine effects of agriculture-based youth programs on high school academic performance

Geneva I. Rawlins

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Correlating Urban Agriculture and Academic Success
A research project to examine effects of agriculture-based youth programs on high school academic performance

by

Geneva I. Rawlins

A creative component submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Program of Study Committee:
Timothy Borich, Major Professor
Lyn Brodersen
Meredith Redlin

Iowa State University
2016
ABSTRACT

The field of Community Development strives to empower communities to increase the quality of life. Within the city of Gary and the Indianapolis inner city context, many organizations exist to help meet the needs of local residents and work to raise the standard of living. Youth garden programs and other forms of agriculture-related activities are becoming increasingly popular in urban settings as service-learning becomes more widely accepted and used in inner city youth outreach programs. This study aimed to examine how three urban agriculture programs are impacting high school students’ academic performance and future goals. In addition, the study attempted to identify key individuals who support these programs and common characteristics of such programs. The importance of these questions lie in the potential for such programs to develop positive traits and skills in students, which later impact a communities’ human and social capital as they graduate and become adult members of society. For the purposes of this study, questionnaires were utilized to collect qualitative data from program leaders, organizational partners, and upper class students. The data were then analyzed using a modified products/outcomes matrix to conduct within case analysis and cross-case analysis of three programs. Unfortunately, participant levels were low and there was insufficient data to draw definitive conclusions. However, this study was able to capture a ‘snapshot’ of current positive attitudes of the student participants, which was encouraging for potential future studies. In addition, the study found several commonalities among the three programs, which may be useful to incorporate into future programs.
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INTRODUCTION

As a transplant to the city from rural Indiana, but as someone working in the agricultural realm, I often ponder the knowledge gap between the agricultural and urban communities. I also find myself thinking about when the two worlds meet, how they might benefit the larger community and the long-term community benefits of youth mentoring programs. The idea for this project began as a concept designed to examine that juncture where urban life and agriculture education meet in a formal setting where mentorships may or may not take place. From a community development standpoint, this study will examine the development of human and social capital through the investment of such programs and any academic influence of at-risk students.

Researching the long-term effects of urban agricultural programs would be a lengthy endeavor. I would be interested in seeing the results of any future study. However, for the purposes of my study, my intent was to create a snapshot of current urban agriculture programs and any academic influence on students in a case study format. In addition, my hope was to create a ‘best practices’ baseline for other programs and perhaps future studies.

Studies have shown that neighborhood environments influence students and their potential to graduate from high school (Crowder & South, 2009). Furthermore, Rumberger (1987) observes the important role graduation plays as a critical building block for economic success later in life (Crowder & South, 2009). For inner city neighborhoods with many negative environmental influences, the odds of students completing their high school education decrease. With a diminished chance for economic success without a high school diploma, the potential of that youth to contribute to the negative neighborhood environment increases. For example, a strong statistical correlation exists between dropping out of school and a youth’s likelihood of committing a crime (Ou & Reynolds, 2010). Thus the pattern becomes cyclical. In order to disrupt the spiral, practitioners of Community Development would attempt to intervene at various points in the cycle.
For this particular study, I will be looking at service-learning programs, specifically those with an agriculture focus, and the unique role they may play in an inner city context. Service-learning programs are becoming increasingly acknowledged as valuable methods for teaching life skills and leadership among urban youth in the United States (Sandler, Vandergrift & VerBruggen, 1995). Historically, youth initiatives in rural areas, such as 4-H and University Extension focused upon the introduction of new agricultural technologies. It was also touted that the benefits of such programs are valuable means to teach life skills and leadership qualities. With the migration of the general population to urban areas, agricultural knowledge is being lost, as well as the life lessons that can be taught through the art of food production.

Statement of the Problem
The goal of this study is to identify benefits that urban agriculture programs offer that may increase the academic success of at-risk youth, and which program factors make such programs successful. In order to study this, I have broken down this goal into 3 components: The first is to determine which factors are commonly present in successful urban agriculture programs, and which factors are absent in unsuccessful programs. The second is to identify key networks of individuals and/or organizations that help create and sustain successful programs. Finally, I will identify trends of individuals, organizations and other key stakeholders who initiate urban agriculture programs for at-risk youth.

Community Context
Indianapolis has a population of 820,445, with a larger metropolitan area extending beyond county lines. Of that 820,445, 25% are children 18 years old and younger (U.S. Census, 2010b). Within the city, the Indianapolis Public School (IPS) system is known as the inner city school system and is the source of controversy for leaders not only in the school system but among state and county officials as well. There are 66 schools in the system, 8 of which are high schools (Indiana Department of Education, 2012).
Four former IPS schools have been taken over by the State due to failure to stay up to educational standards, and may be handed over to the Indianapolis mayor to oversee (Elliot, 2013). For the last 2 years, the IPS system as a whole has received an “F” in the Indiana Department of Education’s accountability and measuring system. It was on “Academic Watch” prior to that (Indiana Department of Education, n.d.). One facet of the school grading system used by the Indiana Department of Education is the percent of on-time graduation. For the IPS system, only 64.6% of students graduate, compared to the Indiana average of 86.2% (Indiana Department of Education, n.d.).

In addition, Indianapolis is seeing an increasing trend in teen violence. Students assaulting and sending death threats to teachers are becoming more commonplace in the news (Guerra, 2013) (McCleery, 2013). Teen violence is also spreading outside the schools. Community leaders are concerned that Indianapolis schools will continue to fail (Milz, 2013). One local minister was quoted saying, "These kids are dealing with conflict, argument and fights by using deadly force now" (Milz, 2013). In 2015, a report by the Huffington Post ranked Indianapolis as 9th in homicides, and the overall homicide rate had surpassed Chicago (16.7 per capita) at 16.9 per 100,000 residents (Carden, 2015) (McQuaid, 2015). In addition to intermittent violence, 19% of the population in Indianapolis live in poverty, and 83% of the students in the IPS system qualify for free or reduced-price lunches (U.S. Census, 2010b) (Elliot, 2013 March 30). Up to 13% of students are learning English as a second language (Elliot, 2013 March 30). Using 2010 data, Table 1 outlines an additional demographic breakdown of the students in the IPS school system as compared to the general population of the city of Indianapolis. Since 2007, enrollment has fallen from 35,257 students in K-12 to 28,193 at the beginning of the 2011 school year (Indiana Department of Education, n.d.b).
Table 1. Population and Demographic Compared to the Indianapolis Public School System, Grades K-12, 2010

<table>
<thead>
<tr>
<th></th>
<th>Indianapolis, General population</th>
<th>Indiana Public School system, students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (number)</td>
<td>820,445</td>
<td>33,372</td>
</tr>
<tr>
<td>White persons (percent)</td>
<td>61.8</td>
<td>22.9</td>
</tr>
<tr>
<td>Black persons (percent)</td>
<td>27.5</td>
<td>55.4</td>
</tr>
<tr>
<td>Asian persons (percent)</td>
<td>2.1</td>
<td>0.3</td>
</tr>
<tr>
<td>Persons of Hispanic or Latino origin (percent)</td>
<td>9.4</td>
<td>15.8</td>
</tr>
</tbody>
</table>

Sources: (Census, 2010b) (Indiana Department of Education, n.d.b)

Despite the fact that Gary, Indiana is much smaller in population than Indianapolis, this city has been included in this study because of its struggling schools and high crime rate. As of 2010, the total population of Gary, Indiana was reported at 80,294 and is the 9th largest city in Indiana. It should also be noted 28% of Gary’s population is under the age of 18 (US Census, 2010b). Over the last 10 years, the Gary Community School Corporation (GCSC) has seen a steady decrease in school enrollment, from just over 16,000 students in 2006 to 6,480 students in the 2015-2016 school year. 1,398 of those students are in grade levels 9-12 (Indiana Department of Education, n.d.a). (A school corporation is a network of schools, housing grades K-12, within a geographic region that fall under the same leader, such as a superintendent).

Because of the decrease in population and a lower student enrollment, the school board is constantly evaluating their resources, and closing schools when deemed necessary. The most recent school was closed in 2015, adding one more building to the nearly 9,000 vacant buildings across the city (Morello, 2015). Of the 13 schools within the school corporation, 3 are secondary schools, hosting grades 9-12 (Indiana Department of Education, n.d.a).

Similar to Indianapolis, the GCSC has received an “F” in the Indiana Department of Education’s accountability and measuring system since the 2010-2011 school year. It was also on the Academic Watch list for the prior year (Indiana Department of Education, n.d.a). The
graduation rate for the GCSC has been below the state average for at least the past 10 years. However, in recent years graduation rate increased from 67.5% in 2011 to 82.1% in 2015 (Indiana Department of Education, n.d.a). Looking at the general population of Gary, it is estimated by the US Census that roughly 39% of the population live in poverty (US Census, 2010b), and 70.7% of the students in k-12 qualified for free or reduced lunches in the 2015-2016 school year (Indiana Department of Education, n.d.a). A further breakdown of the population and demographics of the city of Gary compared to its school corporation can be seen in Table 2 below.

| Table 2. Population and Demographics Compared to the Gary Community School Corporation, Grades K-12, 2010 |
|---------------------------------------------------------------|---------------------------------|---------------------------------|
| Population (number)                                           | Gary, General population        | Gary Community School Corporation, students |
| Population (number)                                           | 80,294                          | 8,920                            |
| White persons (percent)                                       | 10.7                            | 0.7                              |
| Black persons (percent)                                       | 84.8                            | 90.9                             |
| Asian persons (percent)                                       | 0.2                             | 0.1                              |
| Persons of Hispanic or Latino origin (percent)                | 5.1                             | 1.7                              |

Sources: (Census, 2010) (Indiana Department of Education, n.d.)

In 2014, CNN listed Gary, Indiana among the most dangerous cities in the United States (Christie, 2014), with a homicide rate of 53 per capita, or per 100,000 residents in 2013 (Keagle, 2013). As of 2015 Gary was 4 years into an anti-violence initiative, but it is still struggling with surges in violence (Bradley, 2015). Police Chief Wade Ingram and other members of law enforcement cite “small, upstart gangs involved in retaliatory crimes as the primary cause” stemming from arguments that are not necessarily gang or drug related (Keagle, 2013). Violent crime has also been linked to taking place outside gas stations and other 24-hour convenience stores. A proposal was made requiring these businesses to close at 9pm if they did not have video surveillance (Keagle, 2013). Police Chief Ingram also suggested that education could also
play a large role in curbing the violence, perhaps through offering classes that teach conflict resolution to teach skills on how to resolve differences other than by using guns (Keagle, 2013).

Other community leaders are attempting to reach out to at-risk inner city students through gardening and other agriculture related endeavors such as aquaculture (the growing and harvesting of aquatic animals such as tilapia). With community gardens on the rise, a few programs specifically designed for students have been formed (Berggoetz, 2010). While communities may include their youth in their neighborhood gardening efforts, this study is specifically designed to look at programs focusing on high school youth.

Definitions, Delimitations and Assumptions

Several key concepts are important to this study. The first is urban agriculture, which is the practice of animal husbandry, crop cultivation, aquaculture or other types of food production within city limits and is ultimately intended for food consumption.

Second, for the purpose of this study the term “at-risk” youth will be defined as young men and women approximately 14-18 years old who may be identified as having a greater risk of dropping out of high school in Indianapolis, IN. These youth may be from diverse ethnic and socioeconomic backgrounds, and experience negative influences in their home life, from their peers, as well as other environmental circumstances.

Third, academic success will be defined as having graduated high school and having a grade point average of 2.5 or greater.

The fourth concept is program success, which will be defined per the goals of each of the urban agriculture programs and their administrators.

This study will not examine general community gardens but will only look at formal urban agriculture programs specifically targeting at-risk youth. In addition, this research will not
compare urban agriculture programs to other community or mentor programs focused on at-risk youth. Similarly, this study proceeds from the assumption that urban agriculture programs may be beneficial to at-risk youth by encouraging an increase in high school graduation rates. And finally, this study assumes that successful youth programming may be altered to best benefit their focus group and goals.

Importance of Study
According to the 2010 US Census, 80% of the U.S. population currently lives in urban areas where food production and agriculture may seem a world away (U.S. Census, 2010a). A growing trend of community gardening and small-scale agriculture in urban areas has started to reconnect urban populations to the origins of their food. With the upward trend of community gardens, aquaculture and small animal husbandry within city limits, some youth organizations have adopted urban agriculture as part of their program (Sandler, Vandergrift, & VerBruggen, 1995).

While other studies have examined aspects of urban agriculture such as the physical benefits including nutrition and physical activity, the combination of unique skill sets for nurturing and caring for one’s own food provides a unique experience that can prepare youth for success later in life. Given that many youth organizations in cities focus on at-risk youth, urban agriculture would be a natural extension of their overall mission to empower and build life skills among youth. In order to increase the success of agricultural programming among at-risk youth, it is important to outline specific benefits to at-risk youth. It is also important to identify common factors among successful agricultural programs adapted for at-risk youth that may be replicated for other programs.

The importance of studying these particular programs is found in the potential long-term influence on a community’s youth. The hope of such programs is to increase human capital, which
“...includes the skills and abilities of residents as well as the capacity to access outside resources and knowledge in order to increase understanding and to identify promising practices (education, health, skills, and youth). Human capital also addresses leadership's ability to "lead across differences," to focus on assets, to be inclusive and participatory, and to be proactive in shaping the future of the community or group.” (Mattos, 2015)

The Organization for Economic Cooperation and Development defines human capital as “the knowledge, skills and competences and other attributes embodied in individuals that are relevant to economic activity” (Mills, 2012). In 2006, Grace Zolnosky, a youth services coordinator in Wyoming, described people as “the assets necessary for growth and enhancement of any business” (Zolnosky, 2006). She goes on to say that “an investment in a young person is money in the bank. Developing the potential within a young person proves essential to the atmosphere of a safe and healthy community.” (Zolnosky, 2006) In addition, Boberiene (2013) discusses the importance of service learning in a school setting. He argues that empowering youth through programs that develop problem solving and self-management skills, and engages them in “real-world issues” prepare students for the labor market.

Another study examined the relationship between service-learning programs and developing social capital in rural communities. Similar to my study of urban agriculture programs, their focus was on 4-H and FFA case studies and how these programs impacted the youth-adult relationships and overall effects on the community.
Their findings suggested five characteristics that work together to build social capital:

1. Youth and adult leaders become and stay engaged through youth-adult partnerships.
2. Community participation through youth-led projects.
3. Youth and adults share leadership on community projects.
4. Youth and adults work together on the same project over the course of several years.
5. Communities recognize the youth’s contribution. (Ball, Henness & Moncheski, 2013)

While this particular study did not look at academic performance, service learning as a means to increase students’ ability to connect long-term within the community was a key concept. Despite taking place in rural communities, the methodologies of urban agriculture service-learning programs may look very similar, especially if they are also part of the 4-H and FFA organizations.

Reaching at-risk youth, developing leadership and life-skills, and encouraging academic success are not only beneficial to the individual, but ultimately society as a whole (Carnahan, Santelli & Beilenson, 1992); as human and social capital is developed in students, they learn to become contributing members in the larger community, which will in turn influence other community capitals. If students become involved in local leadership or politics (political capital), cultural events and traditions (cultural capital), or perhaps even decision makers for infrastructure and public works projects (built capital). These are just a few examples of the interconnections among community capitals and are by no means all-inclusive. These examples
are meant to demonstrate the indirect positive impact investing in human capital but are not part of the objective of this particular study.

REVIEW OF LITERATURE
The focus of the literature review has been to examine youth programs, both agricultural and non-agricultural related programs. It also examined how other studies have defined the term “at-risk” youth, and looked for common key factors that may carry over from program to program that make a program successful. Therefore, this review of literature will focus on previous research findings in three main areas:

- Factors that create a higher probability of youth engaging in risking behavior, defining them as “at-risk,”
- Benefits of agriculture based programs, and
- Key factors that successful youth programs have in common.

Definitions of At-Risk Youth
The term “at-risk” youth is commonly utilized when referring to children and young adults who, usually due to factors beyond their influence, are at a higher risk for demonstrating and engaging in risky behavior (Bowen, Richman & Rosenfeld, 1998). Boyd, Briers and Herring (1992) report that up to 25% of the nation’s youth engage in alcohol, drugs, have poor academic success or experience teen pregnancy. While researchers, schools and organizations may all have varying definitions, there seems to be a general consensus that “at-risk” implies these and similar delinquencies (Bowen et al., 1998).

However, when creating parameters for a study such as this one, certain aspects of a young person’s life can be looked at and evaluated. For example, negative influences may be found in the home, peer groups or other social situations. Kacker, Schmidt and Shumow (2012) showed that academic trends might reflect a negative home life. Other variables to look at include limited financial resources, limited educational opportunities and behavioral issues (Irwin & Thomas, 2011).
If these factors negatively affect academic success in school, there may be long-term consequences not only for the child, but also for society as a whole. Carnahan, Santelli & Beilenson (1992) state that academic failure is a “waste of human capital, loss of national income, loss of tax revenues, higher risk of sexually transmitted disease, increased use and demand for social services, increased crime, reduced political participation, and higher health care costs” (Bowen et al., 1998: 311). Ou and Reynolds (2010) point out that children whose mother did not complete high school had significantly greater rates of incarceration later in life. In 1997, 41% of inmates had not completed high school (Ou & Reynolds, 2010). In summary, the aforementioned consequences of academic failure may be indicators or predictors of the health of an area’s social capital, or how well stakeholders are able to work together for the good of their society.

**Benefits of Agriculture-Based Programs**

University Extension programs have historically worked closely with 4-H programs, a national program that encourages leadership development and other life skills in rural areas. Boyd et al. (1992) propose that leadership skills provide good coping mechanisms and decision-making skills that act to decrease risky behavior. They go on to note that youth involved in these programs report a greater understanding of leadership than peers who are not involved in youth programs such as 4-H (Boyd et al., 1992).

Some inner city organizations are transferring this philosophy and have initiated gardening programs or incorporated agricultural-based programs into their strategies as an additional way to reach youth. Matthew Dumont, a community psychiatrist, proposes that gardening provides a productive outlet to break the monotony of urban life and creates a sense of community unity (Relf, 1992). Other studies have suggested that natural spaces may act as a buffer to soften emotional stressors and stabilize moods and anxiety (Branas, Cheney, Jackson, MacDonald, Tam, & Ten Have, 2011). Participation in gardens or other agricultural activities also helps
create a sense of place while developing decision-making and problem-solving skills within an environment of teamwork (Lautenschlager & Smith, 2007).

With about 80% of the U.S. population now living in urban areas, many children grow up lacking basic understanding of food production. When nutrition and food education is also a focus of inner city programs, students have a better understanding of healthy eating choices, as well as heightened cultural awareness (Lautenschlager & Smith, 2007). Outside of Tucson, the Pascua Yaqui Tribe has used a garden program to reach students who struggle to succeed in traditional education models. This program utilizes service learning as its primary teaching method, incorporating problem solving, design and research into the garden design and implementation. Program participants also report having greater cultural awareness as well as improved academic success (Sandler, Vandergrift, & VerBruggen, 1995).

The cases included in this review focus primarily on middle school and high school age youth. Whether located in rural areas or the inner city, garden programs as an intervention program for at-risk youth pose numerous potential benefits, although these aforementioned studies primarily look at physical activity, nutritional and cultural awareness. Preliminary studies have shown that programs have the potential to also improve academic success, which is what this study will further delve into.

**Key Factors of Successful Programs**

These programs, while all slightly different in methods and in different regions of the U.S., all have similar components that appear to be key factors in students’ success (Bowen, Richman, and Rosenfeld, 1998). Whether formal or informal, mentorships teach next generation life skills and provide a stable, steady adult in a youth’s life (Bowen et al., 1998). Regardless of the activity or focus (gardening or otherwise), committed adults provide vital support that can be crucial for at-risk youth. This support can be broken down into eight components: listening, emotional, emotional challenge, reality confirmation, task appreciation, task challenge, tangible
assistance and personal assistance support (Bowen et al., 1998). By addressing these support needs, a youth’s overall performance would presumably increase, including academic success.

In addition, age may play a factor in a program’s success (Bowen et al., 1998). While middle school students are more influenced by their peers than adults, high school students tend to look to adults as role models and confidants (Bowen et al., 1998). Therefore, for the purpose of this study, I limit my research population to high school youth who are considered at-risk. Finally, the educational and service learning component of youth programs appears to also be a key strategy for successful programs. While life skills could be taught in any number of ways, agricultural based programs bring a unique aspect to youth, particularly those in urban areas (Lautenschlager & Smith, 2007). My study will build on the findings of the benefits of agricultural based programs for urban at-risk youth.

In summary, negative influences in home life, peer group or environment may make a young person more susceptible to high risk activities and lessen their likelihood of academic success (Bowen et al., 1998). These at-risk high school youth tend to look to adults to teach them valuable skills and provide social support as they finish out their adolescence success (Bowen et al., 1998). With the ever-widening gap of agricultural knowledge and youth, urban agriculture programs may provide a unique opportunity to encourage creativity, problem solving, nurturing, nutrition, failure and successes in a safe and social environment (Lautenschlager & Smith, 2007). While the methods of growing food or raising animals may be a unique experience in itself, youth agriculture programs also provide an opportunity for a youth to find social support in adult mentors. My study attempted to expand on this idea, intending to identify specific benefits that urban agriculture programs offer to at-risk youth, and common characteristics of successful programs.

RESEARCH APPROACH

Drawing from Creswell (2007) and Patton (2002), my intent was to present a case study of three urban agriculture programs that focus on high school students. In order to find the
participating programs, I attempted to use snowball or chain sampling, described by Patton (2002) as an approach that utilizes “well-situated” people and following the leads to those names or programs are repeatedly mentioned. Using that model, I communicated with several contacts in order to gain information about other potential leaders of established key youth programs in the Indianapolis community.

After contacting several individuals and running into dead ends, I turned to ‘cold calling’ organizations for additional leads. Unfortunately, I ultimately ended up convenience sampling, which is described as fast, convenient and the least desirable of sampling methods (Patton, 2002). Because of the number of dead ends, I ended up collecting data from the only three urban agriculture programs that felt qualified to participate.

These three different garden or agriculture programs focused on inner city youth and were located in Gary, Indiana and the Indianapolis inner city area. One key personnel per program was asked to complete a questionnaire (see Appendix 1). In addition, three supporting community leaders (one per program) were identified and asked to complete a questionnaire (see Appendix 2). This could have been any partner or key individual such as farmers’ market personnel, extension advisors or additional community leaders identified through the research process.

I utilized an open-ended questionnaire format that could be filled out independently and were distributed to urban garden and agriculture program leaders, staff, volunteers or organizational partners. In order to make the questionnaire as convenient as possible for participants, I converted my questionnaires and consent forms into Google Forms, a web-based software, which was easily distributed to those willing to participate. Another advantage to Google Forms is that the software also automatically compiles responses.

The information collected with the questionnaires inquired about:
• Program methods
• Founders of the program
• Key staff or volunteers
• Mentorships: are they formal or informal?
• Key supporters and/or partners of the program
• Key benefits gained by students
• Academic requirements
• Potential improvements in programming
• Failed methodologies
• Measurements of success

In addition, I sought a maximum of 10 graduating seniors per participating program to complete a similar questionnaire tailored to gain their perspective of how their program influenced them academically. Specific questions for these program graduates pertained to their experiences in the youth program, although some questions may have overlapped with those asked of program leaders and partners.

In particular, information gathered through the students’ questionnaires pertained to:
• Why program participation was chosen
• Unique benefits gained from the program
• Influential people within the program and/or network
• Mentoring: from the students’ perspective
• How their academic performance was affected by the program
• Potential improvements in programming
• Future goals

Following data collection, I followed Patton and Creswell’s general outline of how to generate data collection into the actual case study. Patton (2002) paints a picture of a case study as
being complete enough for subsequent analysis, but manageable and organized. To conduct my analysis, I used content analysis to identify patterns and themes. As Patton (2002) states, “content analysis is used to...identify core consistencies and meanings.”

Having three cases to examine, I used what Creswell defines as within-case analysis and cross-case analysis, looking at themes within each individual case and across all three cases (Creswell, 2007). I did not use computer software and coding for analysis, but used an adaptation of Patton’s process/outcomes matrix (Patton, 2002). Following each case record, I created 2 such matrices and due to the low volume of raw data collected, I looked for key concepts to compare instead of keywords. The first matrix following each case record will be a breakdown of gathered data into three goals of the study: Program Characteristics, Founding Individuals/Organizations and Sustaining/Individuals. Following the first matrix, I created a second matrix, attempting to match how the programs influenced the students with general subject matters of an agricultural education curriculum, such as gardening, animal husbandry, and entrepreneurship. I used the students’ responses since they self-reported how such programs may or may not have influenced them.

Following the three program cases, I then attempted a cross-case analysis by combining the matrices accordingly. The three matrices examining the three study goals were combined together. Likewise, the three matrices looking at program influences were combined together. After combining the data from each program, I looked for similarities between the three cases. In each matrix, I indicated repeat phrases and concepts.

ETHICAL CONCERNS
This research is subject to the approval of the IRB due to the sensitive nature of including students in a research study. As a protected group, youth must be protected from unnecessary risk and I fully anticipated utilizing the necessary means to protect the students to the full extent deemed necessary for this study.
Steps taken to ensure anonymity included:

- For students considered to be minors, consent forms were signed by a parent or guardian as a requirement for study participants.
- The identities of students who agreed to complete a questionnaire were also protected through the withholding of names or identifying descriptions, such as age and ethnicities. (Ethnicities were not a requested detail, and the only question relating to age was self-reporting question asking if they were 18 years old.)

After communicating with the IRB and Dr. Timothy Borich, I decided I would depend on program leaders to distribute any needed consent forms and the link to my questionnaire to students. This minimized contact with the students and by deciding to not formally publish, I did not need formal IRB approval to continue this project.

Initial steps to begin research commenced in August 2015 by contacting potential garden and agricultural program leaders. Appendix 4 outlines the full timeline of this study, Appendix 5 contains the parent consent form, and Appendix 6 contains the student consent form that was distributed with the questionnaire. Going through the proper channels and with the approval of program leaders, I first distributed permission slips via the adult sponsors. These sponsors asked for parents’ consent to their students’ involvement prior to distribution of the questionnaire.

Distribution of permission slips and questionnaires were done electronically. Permission slips were collected by program sponsors, scanned and emailed to me. The questionnaires were formatted on a Google form and the link distributed by the program sponsor once the parent consent form, if necessary, was collected. To maintain the privacy of the students, questionnaire responses were directly collected into a Google spreadsheet. Program sponsors were not privy to their students’ responses. Finally, identifying features relative to the programs were scrubbed to protect the identity of the programs and further deduce the identity of students who may be have participated in this study.
RESPONSE ANALYSIS

Upon receiving approval to move forward with this project, I began contacting a few individuals I am acquainted with who are involved with local community gardens. Because they work with general urban gardens or other urban agricultural endeavors whose audience or focus is adults, their programs did not qualify for this particular study, however my hope was to be referred to contacts they may have had. I also sought out programs that were highlighted on the local news or in the newspaper, however many of those either no longer viable programs, or again, focused on adults.

After several dead ends, I was referred to the local Extension office, and put into contact with a staff member who had worked as a support person for several programs in the area. She provided contact information for several programs and also agreed to participate in this study herself. Of those contacts she provided, two responded positively and participated. After failing to find a third participating program in Indianapolis, I expanded my search for programs in Gary, Indiana and contacted the Extension office as well as emailed a few organizations I found through an online search. A cold-call to an organization referred me to another group. The group responded positively and is included in the following cases.

Program 1

Towards the beginning of my process of data collection, I contacted the local Extension office and was put into contact with the Horticulture Educator. Through her work, she sees first-hand how urban students have little exposure to gardening and little knowledge about where their food comes from. Therefore, from her perspective, she sees the main benefits of urban agriculture programs as an avenue for students to be introduced to fresh fruit and vegetables and how to grow and raise them. Her particular role is to provide support to various programs and guidance for on-site development of gardens or other agriculture related projects. When working with students her goal is to utilize hands-on activities using real-life methods of growing produce.
While the program staff is responsible for sustaining the programs, the Horticulture Educator is able to help develop committees to set up components of programs, such as weeding, supplies, etc. There is also curriculum that has state teaching standards that can be used in a school setting and clubs may provide another opportunity for students to be in charge of specific projects either during or after school. The Educator I spoke with indicated that programs would benefit from increased support from administrators and having a plan to be sustainable from the very beginning; programs such as these are not a one-person job. Currently a program’s success is measured by the level of student involvement, and student knowledge using pre and post testing. Programs for the older students may include other disciplines, such as math, science, etc. in the garden program and use those skills to measure academic progress.

This Extension Educator works with two agriculture teachers who were willing to participate in this study. They indicated that their program was founded by the superintendent of the school and a leader within community who is a former Elanco employee. (Elanco is a large agriculture industry just outside of Indianapolis.) Both founders have ties to agriculture and believe the school’s students would benefit from Life Sciences and Agricultural Sciences. The community leader continues to serve as their advisory board president and regularly volunteers with the agricultural programs offered in the school system.

The aforementioned advisory board consists of local business and industry representatives (such as Farm Bureau, Eli Lilly, Dow AgroSciences, ADM, Elanco) and various educational representatives (i.e., Purdue University, Ivy Tech, Vincennes, the local Extension office, FFA, and the school administration and counselors). In addition, 2 parents are involved per class. Because it is unlikely that the students will find careers in production agriculture, their program focuses more on inputs and outputs of farming, the science of agricultural production and the demand for skilled workers in the life science field.
Specific classes are offered that address Animal Science, Plant and Soil Science and Natural Resources. Since the program’s inception in 2012, student participation has grown to 245 students enrolled between the various courses and a FFA (Future Farmers of America) chapter that meets monthly. In addition, they started a career program, matching students with professionals in their field of interest using assessments that are presented to their advisory board. This advisory board helps them find professionals to match their interests to discuss potential career paths. While there is no academic requirement to be involved in the agriculture courses or FFA, such as a minimum GPA, the teachers want students to pass their classes and maintain good grades.

Continual improvements are always being sought; currently they are pursuing a greenhouse to implement research projects into their program and hope that more students become involved. At this point, the teachers perceive the programs to be successful and give credit to a good team of 4 teachers (2 in the high school, 2 in the middle school) and an involved advisory board who acts as their “compass and sounding board.”

While only one student responded to my questionnaire, the information received was positive. This student responded that they joined this class because of their goal of becoming a DNR officer (Department of Natural Resources Conservation Officer) upon completion of military service. According to this student, their agriculture class related to a Conservation Officer’s career path and taught them to slow down, observe details and improve observation skills. They cited their teacher as being influential in teaching these skills, although did not identify the teachers as mentors. Because the student had a personal interest in the class, the class did not seem difficult; however more labs and hands on activities would have improved the quality of the class, from their perspective.
Table 3.1

<table>
<thead>
<tr>
<th>Program Characteristics</th>
<th>Founding Individual/Organization</th>
<th>Sustaining Individual/Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advisory Board: Representatives from private businesses, educational institutions &amp; parents</td>
<td>School Superintendent</td>
<td>School Staff/Educators</td>
</tr>
<tr>
<td>Variety of interests addressed: animal science, plant science, natural resources</td>
<td>Community leader with interest in ag/Elanco Employee</td>
<td></td>
</tr>
<tr>
<td>Extra-curricular clubs: FFA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No grade/academic requirement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effectiveness measured by tests and student involvement.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachers identified as influential, but not as mentor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Career mentoring</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.2

<table>
<thead>
<tr>
<th>Program Outcomes from Student’s Perspective</th>
<th>N=1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership Skills</td>
<td>Work Ethic</td>
</tr>
<tr>
<td>Garden Activities</td>
<td></td>
</tr>
<tr>
<td>Animal Husbandry</td>
<td></td>
</tr>
<tr>
<td>Entrepreneurship</td>
<td></td>
</tr>
<tr>
<td>Unspecified activities</td>
<td>Improved observation skills</td>
</tr>
</tbody>
</table>

N=1
Program 2

The Horticulture Educator also pointed me in the direction of another school in the Indianapolis area. The Director of the department which houses their agriculture program responded to my questionnaire and described their program’s goal of providing opportunities to explore career fields in agriculture and animal science. Between student interest, labor demand and industry partnerships, the agriculture program was developed in 1994 as classes that are offered through the school day. In addition, FFA, SAE and internships through a local organization are offered for additional learning opportunities. The local organization is a non-profit whose goal is to promote agriculture and healthy living in the urban environment.

The agriculture teacher and local community partners sustain the program, which reached 124 students in the 2015-2016 academic school year. While there is no formal mentorship program, the school works with students to help them make “informed and confident decisions” for their future and also works to ensure students are placed upon graduation, whether that is into employment, post-secondary school or enlisted in the military.

There were two students from this program who participated in this study. They indicated they were involved with and enjoy the program because they were given the opportunity to work on new projects, experience new things, and learn how to grow produce themselves. Also, the students indicated they feel good knowing they are helping the community and learning about agriculture that may help them in a future career. Problem-solving and presentation skills were mentioned as being an unexpected benefit from their classes. While one student saw their teacher as a mentor and the other did not, both students indicated she has been influential. In their words, verbatim from their responses: “she is not only helpful in what i want to do career wise but also very helpful in my everyday life that makes me know I can always look for advise” and “I see my advisor… as a very influential person in my life because no matter how much she has on her plate she always finds way to get it all done. She's always happy and never brings a bad face to school.”
In addition, one student indicated that although they consider their grades to be good, being able to do hands-on activities was motivating to do their best or better themselves even more. This student even would like to experience longer activities and additional opportunities. The other student had a mixed reaction, saying that while the program helped with presentation skills, it did take a lot of time, to the point of being unable to spend adequate time on other coursework. This student would also have liked to see more respect and support from administrators in regards to their FFA chapter. Both students had goals that would require college degrees in the agriculture discipline; one with plans to become a veterinarian and the other hopes to utilize computer engineering in the food industry.

Table 4.1

<table>
<thead>
<tr>
<th>Program Characteristics</th>
<th>Founding Individual/Organization</th>
<th>Sustaining Individual/Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra-curricular clubs: FFA, SAE</td>
<td></td>
<td>Agriculture Teacher</td>
</tr>
<tr>
<td>Internships</td>
<td></td>
<td>Community Partner: local not-for-profit focusing on wellness through urban agriculture</td>
</tr>
<tr>
<td>Partnership with local 'real-life' not-for-profit business.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Career counseling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher identified as a mentor by one student</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher identified as influential, but not mentor by one student</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goals: to provide opportunities to explore ag careers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 4.2

<table>
<thead>
<tr>
<th>Program Outcomes from Students' Perspective</th>
<th>N=2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leadership Skills</strong></td>
<td><strong>Work Ethic</strong></td>
</tr>
<tr>
<td>Garden Activities</td>
<td></td>
</tr>
<tr>
<td>Animal Husbandry</td>
<td></td>
</tr>
<tr>
<td>Entrepreneurship</td>
<td>Problem-solving skills; Presentation skills (x2 students)</td>
</tr>
<tr>
<td>Unspecified activities</td>
<td></td>
</tr>
</tbody>
</table>

**Program 3**

The third program is located in Gary, Indiana and was founded as a 4-H club and evolved into an entrepreneurship program. After 4-H students raised chickens for the purpose of showmanship in the County Fair, they began to lay eggs. The decision to sell the eggs began the student-owned business and a partnership with a local specialty grocery store. Students are required to take an entrepreneurship class, and the egg business was added to the course offerings as an advanced entrepreneur class.

This course offers students training in running a small business, applies in-class concepts, project based learning, higher order thinking and promotes teamwork. The environment promotes initiative and self-motivation and creates an environment to learn from mistakes. The only requirement for the course is willingness to work and the completion of the initial entrepreneur course.
Within the class students are given opportunities to specialize in marketing, poultry, goats and/or produce. Students are charged with researching how to run their part of the business. For example, poultry teams are charged with caring for the chickens, collecting, cleaning, packaging and selling eggs. Produce teams decide what plants to grow, planting seeds and caring for the plants and then selling them. The goat team is currently working on a goat milk soap recipe.

Because this is a fairly new program, the adult sponsorship of the program is still evolving. The fall 2016 course was the program’s third semester, with 15 students participating in the fall of 2015, and another 15 in the spring semester of 2016. The Entrepreneur/Personal Finance teacher directs the class and other staff volunteers to assist. In addition, community members who are experts in these fields provide advice to students, but no formal mentor program exists, although that is a long-term goal. As mentioned before, a local specialty grocery store partners with the program to provide a location to sell eggs, but this program is also supported by two universities and a former and current mayor. The local newspapers have also featured the program, which resulted in additional community support in the form of donated egg cartons and even a grant to receive free seeds from a seed company.

Spring of 2016 was the third semester of offering this course, so it is still developing. In the future, there is hope to expand the scope of the business and collaborate more with the community, such as participating in the farmers markets and increasing space for their farm. While a formal evaluation system has not been created, feedback from students and the size of the class currently serves as an indicator for the success and demand for the class. In addition, student participation and the success of the business (profits) are being used to measure student success and will likely be used as a barometer for decisions regarding customer expansion or increases in production.

Of the six student responses I received from this program, a majority indicated that they did not voluntarily become involved, but were assigned the advanced entrepreneurship class.
However, half of the responses went on to say that despite being assigned the course, they found it enjoyable, like the hands-on component of the course and enjoy learning about plants. One student indicated that receiving an “A” in the course was a direct benefit and the rest cited aspects of the learning experience, such as making soap from goat milk and how to care for plants, animals and the worms. Overall, students thought the class was sufficient as is or could be improved with more animals. However, one student hinted that perhaps not all students participate fairly and need to work harder.

While none of the students affiliate a mentor with their program, they all mention their instructors as being influential for various reasons. These reasons range from the specific, such as being teaching them how to feed the chickens without trouble from the rooster to the more general, such as being helpful and encouraging and founding and organizing the program. When asked about how the program has influenced them, responses indicated they did well and received “A’s”. One student mentioned that it helped boost their grades up past the “A+” average, but another student said that participation in the course did not impact their grades in any way. Looking at the future, half of the students indicated they would like to own their own business, and all had career goals in various occupational fields.
Table 5.1

<table>
<thead>
<tr>
<th>Program Characteristics</th>
<th>Founding Individual/Organization</th>
<th>Sustaining Individual/Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program teaches entrepreneurship (advanced class has basic class as prerequisite)</td>
<td>Founded as 4-H Club</td>
<td>Entrepreneur/Personal Finance Teacher</td>
</tr>
<tr>
<td>Incorporates small livestock (chickens &amp; goats), produce and marketing</td>
<td></td>
<td>Other staff</td>
</tr>
<tr>
<td>Community members act as advisors for the business</td>
<td></td>
<td>Other volunteers</td>
</tr>
<tr>
<td>Partners with local 'real-life' store</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Future plans to expand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation process: Student participation &amp; business profitability. Also, feedback from students &amp; size of class (demand).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5.2

<table>
<thead>
<tr>
<th>Program Outcomes from Students' Perspective</th>
<th>N=6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leadership Skills</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Work Ethic</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Grades</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Long-Term Goals</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
</tr>
</tbody>
</table>

| Garden Activities                          |     |
| Animal Husbandry                           |     |
| Entrepreneurship                           |     |
| Three students want to own their own business |     |
| Unspecified activities                     |     |
| Three students indicated that the class helped them achieve good grades. |     |
| All 6 students had career goals in various fields |     |
Trends in Urban Agriculture Programs

Despite the three programs having different focuses, projects and implementation methods, the underlying characteristics or values used for the programs were very similar. I observed that from the students’ perspective, having hands-on activities that teach real life skills and relate to potential future careers were important and motivating. The majority of students have long-term goals and three indicated that certain aspects of leadership skills were developed through the course of their program. Judging from the students’ responses, I would deduct that attentive teachers and engaging activities seem to be motivating for students to try their best and work hard (thus achieving high grades), however proving correlation and causation cannot be completed within the scope of this study. Table 6.1 summarizes the three case records.

Looking at Table 6.2, there are several characteristics that overlap through each of three urban agriculture programs that participated. Repeat characteristics between the three programs were: advisory boards, additional focus on career counseling and advising, extracurricular component (i.e., FFA, 4H), based effectiveness on student participation, partnered with ‘real-life’ entities, and depended on teachers to sustain the program. In addition, many students indicated that while they did not define their teachers as mentors, they were influential, encouraging, helpful and attentive to needs of their students.

I did not receive negative feedback regarding these programs, nor descriptions of failures.

As stated earlier, my initial perception of urban agriculture programs being common among the community was misjudged. With some exceptions, such as the three participating programs, I found that the key individuals involved in these urban agriculture programs are teachers and administrators who believe that offering life sciences and agriculture education offer urban students an opportunity they would otherwise not have.
These programs all had the backing of their school administration, along with the support of private businesses and public entities, such as universities. These partnerships support the teachers’ efforts to expand students’ experiences and opportunities beyond what the schools could do on their own.

Table 6.1

<table>
<thead>
<tr>
<th></th>
<th>Leadership Skills</th>
<th>Work Ethic</th>
<th>Grades</th>
<th>Long-Term Goals</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garden Activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>How to grow produce</td>
</tr>
<tr>
<td>Animal Husbandry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Veterinarian</td>
</tr>
<tr>
<td>Entrepreneurship</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Three students want to own their own business</td>
</tr>
<tr>
<td>Unspecified activities</td>
<td>Improved observation skills; Problem-solving skills; Presentation skills (x2 students)</td>
<td>Good grades motivated by hands-on activities; Three students indicated that the class helped achieve good grades.</td>
<td>Seven students had career goals in various fields</td>
<td>Joined class because of long-term goals</td>
<td></td>
</tr>
</tbody>
</table>
Table 6.2

<table>
<thead>
<tr>
<th>Program Characteristics</th>
<th>Founding Individual/Organization</th>
<th>Sustaining Individual/Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>No grade/academic</td>
<td>Community leader with</td>
<td>Entrepreneur/Personal</td>
</tr>
<tr>
<td>requirement</td>
<td>interest in ag/Elanco</td>
<td>Finance Teacher</td>
</tr>
<tr>
<td></td>
<td>Employee</td>
<td></td>
</tr>
<tr>
<td>Program teaches</td>
<td>Founded as 4-H Club</td>
<td>Repeat Response/Concept</td>
</tr>
<tr>
<td>entrepreneurship</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(advanced class has basic class</td>
<td>School Staff/Educators</td>
</tr>
<tr>
<td></td>
<td>as prerequisite)</td>
<td></td>
</tr>
<tr>
<td>Advisory board:</td>
<td>School Superintendent</td>
<td></td>
</tr>
<tr>
<td>Community members for</td>
<td></td>
<td></td>
</tr>
<tr>
<td>the students' business</td>
<td>Advisory Board: Representatives</td>
<td></td>
</tr>
<tr>
<td></td>
<td>from private businesses,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>educational institutions &amp;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>parents</td>
<td></td>
</tr>
<tr>
<td>Career counseling</td>
<td>Other volunteers</td>
<td></td>
</tr>
<tr>
<td>Career mentoring</td>
<td>Community Partners</td>
<td></td>
</tr>
<tr>
<td>Goals: to provide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>opportunities to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>explore ag careers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internships</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effectiveness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>measured by tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and student</td>
<td></td>
<td></td>
</tr>
<tr>
<td>involvement.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation process:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student participation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&amp; business</td>
<td></td>
<td></td>
</tr>
<tr>
<td>profitability. Also,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>feedback from</td>
<td></td>
<td></td>
</tr>
<tr>
<td>students &amp; size of</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Lessons learned during data collection

Upon reaching out to various organizations, I found that many urban agriculture organizations reach out to elementary and junior high youth. Not many yet exist that focus exclusively on high school youth or had enough high school seniors to participate in this research project.

Programs that do focus on high school youth are concentrated within the high schools. Of eight

<table>
<thead>
<tr>
<th>Repeat Response/Concept</th>
<th>Extra-curricular clubs: FFA, SAE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Future plans to expand</td>
<td>Incorporates small livestock (chickens &amp; goats), produce and marketing</td>
</tr>
<tr>
<td>Repeat Response/Concept</td>
<td>Partners with local 'real-life' store</td>
</tr>
<tr>
<td></td>
<td>Partnership with local 'real-life' not-for-profit business.</td>
</tr>
<tr>
<td>Repeat Response/Concept</td>
<td>Teacher identified as a mentor by one student</td>
</tr>
<tr>
<td></td>
<td>Teacher identified as influential, but not mentor by one student</td>
</tr>
<tr>
<td></td>
<td>Teachers identified as influential, but not as mentor.</td>
</tr>
<tr>
<td>Repeat Response/Concept</td>
<td>Variety of interests addressed: animal science, plant science, natural resources</td>
</tr>
</tbody>
</table>

class (demand).
programs that I contacted, only two programs in Indianapolis, IN were willing to participate, as well as an additional program in Gary, IN.

Of the programs that declined to participate, all but one expressed enthusiasm and interest in this project and would have liked to receive my results, indicating to me that many programs are still in the development stage.

All three of the participating organizations were part of a formal agricultural program formed within their respective school district and had classes associated with extracurricular gardening or other agricultural experiences, such as FFA or 4H. Unfortunately, I feel the limited number of established programs affected my sampling group as only three program leaders thought their programs were developed enough to provide insight into their methods and results.

Additional challenges affecting my data collection strategy include:

- The original intent was to gather 30 student surveys from graduating seniors. Because of the low response rate, the participation was expanded to also include other upper classmen, expanding student participation from not only high school seniors to also high school juniors.
- Survey responses were gathered via Google Forms and while Program 2’s agriculture teacher had completed the survey, her responses inexplicably disappeared from the online spreadsheet that housed the form responses. I followed up with her twice requesting a 2\textsuperscript{nd} submission; however at the time of this writing, I had not received a response.
- The program sponsor/agriculture teacher for Program 3 recommended a community support person (the owner of the specialty grocery store) to participate. I had arranged to speak with the owner after sending her the project information and the link to the questionnaire. However, I was unsuccessful at both reaching her via phone call and receiving a questionnaire response.
Despite the unfortunate loss of one response through Google Forms, that particular instructor was enthusiastic and encouraging in our initial conversation as well. The instructors and community supporters with whom I had communications were also supportive. However, the lack of student responses indicated that the students were less inclined to participate and less excited about sharing their experiences. I requested the first and second program’s teachers to encourage their students to complete their surveys several times, but despite their urging, I only received three responses between the two programs. This could be due to several reasons, such as students were not compensated in any form and it appeared too much like extra homework. Participation in this study would have needed to come from self-motivation and a willingness to share their experiences.

CONCLUSION

SUMMARY

In an urban setting, gardening and agricultural activities may be a welcome break from the concrete and fast pace of the city. A quick news or Internet search will result in a growing list of gardening programs in both Indianapolis and Gary. Participation in these community gardens is on the rise as are garden programs designed specifically for youth. As I learned, most programs are geared for junior high or younger age students; however there are a scattered few whose primary focus is on high school students.

I was interested in studying these urban agriculture programs and their effect on academic success. While previous studies had shown an increase in knowledge regarding food nutrition, cultural awareness and physical activity, little had been researched regarding academic impact and what successful programs may have in common (Sandler, Vandergrift, & VerBrugghen, 1995). Through qualitative research in the form of questionnaires, my intent was to collect information to highlight best practices for urban agriculture programs whose focus is on high school students. In order to study this, I broke down the research into 3 components: The first was to determine which factors are commonly present in successful urban agriculture programs, and which factors are absent in unsuccessful programs. The second was to identify
key networks of individuals and/or organizations that help create and sustain successful programs. Finally, I attempted to identify trends of individuals, organizations and other key stakeholders who initiate urban agriculture programs for at-risk youth.

After difficulties finding programs willing to participate and a low response rate among students I ended up with an abbreviated summary of commonalities among three programs. In addition, I cannot support definitively how urban agriculture programs positively affect students academically; however, I did capture some feedback from students regarding their experience.

Though it is tempting to label my project as ‘failed’, Patton is encouraging in saying that there is always something to take away from research endeavors, even if it’s not the expected outcome. To quote him, he wrote that the value in the project is that “the thoughts and reflections from those people at that time and that place are there, recorded and reported” (Patton, 2002).

Despite not being able to definitively prove anything definitively through this research project, I maintain that this study is important because of the potential for influencing inner city youth in a positive manner using agriculture as the means. The disassociation between agriculture and the urban population is a widening gap, and offering agricultural education is one avenue of bridging that gap. While I cannot say whether or not the agriculture classes influenced their grades and GPAs, I can extract three main take away points from my study. The first is that the majority of students stated long-term goals, many of which included future careers related to natural resources or agriculture. Second, it appeared the students developed aspects of leadership skills through learning hands-on methods of problems solving, business models, basic animal husbandry and plant science. Third, students reflected respect and appreciation for their instructors and the other adults who are involved in sustaining their programs.

These traits and skills are important for the future of the broader community. In terms of community development, developing these skills increases both human and social capital. If
students are learning leadership skills, learning to respect and appreciation adults and have long-term goals, then they have gained a few characteristics that will benefit them as they move into careers and other endeavors as adults. These characteristics may serve as building blocks for their future, which will in turn benefit the larger community, as they become productive members of society.

Students who learn to trust and respect adults are given the foundation to trust future co-workers and/or instructors. In addition, those students who were given the opportunity to partner with professionals or ‘real-life’ businesses now have this relationship that may continue to be advantageous in the future; they have a foundation for future networking and resources. In terms of social capital, this is referred to as bonding capital: connections among people with like-minded interests.

To restate Carnahan, Santelli & Beilenson (1992) from the beginning of my paper, academic failure is a “waste of human capital, loss of national income, loss of tax revenues, higher risk of sexually transmitted disease, increased use and demand for social services, increased crime, reduced political participation, and higher health care costs” (Bowen et al., 1998: 311). Using programs that focus on agriculture in an urban environment may be beneficial as another methodology in the so-called ‘tool-box’ of community developers. Programs such as these may help break the cycle of an inner city losing its potential pool of human capital. The programs that participated were in geographical locations considered to be ‘inner city’. As we saw in the literature review, students who may be surrounded by negative environments have a reduced chance of finishing high school or creating goals for their future.

Unfortunately, I will repeat that this study could not support the promise that these programs “break the cycle”, or even increase a student’s probability of graduation or higher grades than students who are not involved in these programs. That being said, the hands-on service learning style appeared to be received as a positive influence and motivating. To organize and sustain these urban agriculture programs is an investment in time, collaboration, resources and
supplies. Despite the hard work and effort, I think Zolnosky (2006) summarizes well what I consider the value of such programs: “an investment in a young person is money in the bank. Developing the potential within a young person proves essential to the atmosphere of a safe and healthy community.”

**FUTURE RESEARCH**

In conclusion, agriculture programs have been shown to benefit rural communities, and with further study could perhaps be shown to benefit urban students and their communities. Through the process of the study I began to contemplate other qualitative benefits of these urban programs and ended up with more questions that what I started with. Are there benefits that would perhaps be more important than achieving higher grade point averages? For example, from the collected data and literature review, there were hints that these programs provide safe spaces and informal mentor-student relationships. How else do the outcomes of the urban programs differ from rural programs? Future studies could delve further into these various questions to gain more insight.

If I was to approach this study again and time was not a restraint, I would take the time to interview students directly. I believe this would have allowed me to collect a more comprehensive data set. The questionnaires were convenient, but participants perhaps would have expanded more on their responses with a verbal interview. In addition, by setting up interviews with students, I perhaps would have been able to gain more student responses. I understand this would have made an IRB review necessary, and would have cost more time to complete the process of IRB approval.

Despite my limited interactions with the participating adults and separation, I found the responses interesting and encouraging. While I was unable to fully acquire the amount of data I had hoped for, I believe that there is potential to expand on this study and further investigate long-term influences of urban agriculture programs. Future studies could continue to look for trends in interests and/or influences regarding academic performance in relation to garden and
agriculture programs. Having a larger data set would help validate themes and patterns in the data.

If this study were to be extended, multiple years of student interviews could be compiled to gain insight into the fluctuation of interest into garden and agriculture programs. In addition, this study could be modified to include assessments as students enter and exit the program to evaluate growth. This would allow for insight into how students’ skills develop and are influenced academically during their time in the program. In addition, surveying a ‘control group’, or a group of students not involved in urban agriculture programs, would allow for a comparison of skills, long-term goals and academic performance.

In addition, the compilation of information from conversations with program leaders, other key community leaders and interviews with students would be beneficial for future community leaders seeking best practice methods for founding a garden or agricultural program. However, this study was somewhat limited in the scope of programs in its investigation. Inclusion or expansion of additional youth program models would provide further data to compare to the original programs in the study. The three youth programs I chose were chosen through a combination of chain and convenience sampling as I kept hitting dead ends. I would have preferred to spend more in-depth time with program leaders and their partners than what I actually ended up with; this limited the amount of data collected for this study. A more extended study would assist to alleviate the small population size of interviews, thus providing further data from which to draw best practice methods for future program leaders.

Likewise, increasing the number of questionnaires collected from additional program leaders and organizational partners would provide a broader spectrum of information. As with the student responses, a larger data pool would further validate data collected in this study and potentially broaden the scope of best practice methods. If additional data were collected, this research could provide succinct data demonstrating how to establish similar programs, reaching more at-risk youth and ultimately developing long-term human and social capital in our cities.
As I noted earlier in my text, few studies currently exist that examine the relationship between agricultural and garden activities and academic success in youth (Sandler, Vandergrift, & VerBrugghen, 1995). While the purpose of this study was to gain insight into this relationship and examine the potential for such youth programs to make an impact on students’ academic performance, this is only the first step. This study was limited to the 2015-2016 academic school year and is a brief snapshot in time. This study could easily be extended to further investigate how and to what extent these particular youth programs impact students’ academic performance.
References


Appendix 1

Urban Agriculture as it relates to Academic Performance
Program Leader Consent and Questionnaire

Dear Sir or Madam,

You are asked to participate in a research study conducted by Geneva Rawlins, graduate student in Community Development, and Dr. Timothy Borich, Ph.D. at Iowa State University. You were selected as a possible participant in this study because you are a vital leader within a youth gardening program. Your participation in this research study is voluntary.

This study is being done to find out more about the influences of youth gardening programs on grades and graduation rates.

If you volunteer to participate in this study, the researcher is asking that you to do the following: Complete a questionnaire electronically or during an interview with graduate student Geneva Rawlins, which should take no more than 1 hour in length. Questions will include but not limited to topics regarding program methods, academic requirements, and measures of success.

There are no anticipated risks or discomforts associated with this research.

There is no direct benefit to you personally for taking part in this study. However, we hope that the results of the research will help mentoring programs better understand how gardening activities may help students academically in the future.

We will keep your study data as confidential as possible. If we publish or present results of this study, individual names or other personally identifiable information will not be used.

You will not be paid for being in this study.

There are no anticipated risks or discomforts foreseen from participating in this survey.

Participation in research is completely voluntary. You have the right to decline participation or to withdraw from the study without penalty or loss of benefits to which you are otherwise entitled.

You can ask questions about this study at any time, now or later. You can talk to Geneva Rawlins or Dr. Timothy Borich, professor at Iowa State University at any time during the study. You can contact Geneva at genrawlins@gmail.com. Or you can contact Dr. Timothy Borich at borich@iastate.edu.
PARTICIPANT CONSENT

☐ I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study.

☐ I decline to participate in this study.

RESEARCH QUESTIONS:

1. Please explain principles or thought process behind [*insert organization’s name*] program methods.

2. Who were the founders of the program, and what was their motivation to begin such a program?

3. How is your program executed?

4. Do you rely on key staff, volunteers, a combination of the two or other individuals to sustain the program?

5. Regarding mentoring of students: are mentorships formal or informal? (i.e., do adults involved with the organization become assigned to specific students?) Please explain.

6. Who are key supporters and/or partners of [*insert organization’s name*]’s garden/agriculture program? Names are not necessary, but please explain roles or titles.

7. From your perspective, what are key benefits students gain by being involved in this program?

8. What, if any, are the academic requirements (for example, a certain level of GPA) for students to be involved in [*insert organization’s name*]’s program?

9. From your perspective, what potential improvements could be made to the program?

10. Could you explain any failed methodologies, what was learned and how the program was adjusted?
11. How does your organization measure success for yourself as a staff person/volunteer?

12. How does your organization measure success for students?
Appendix 2

Urban Agriculture as it relates to Academic Performance
Community Leader Consent and Questionnaire

Dear Sir or Madam,

You are asked to participate in a research study conducted by Geneva Rawlins, graduate student in Community Development, and Dr. Timothy Borich, Ph.D. at Iowa State University. You were selected as a possible participant in this study because you are a vital leader within a youth gardening program. Your participation in this research study is voluntary.

This study is being done to find out more about the influences of youth gardening programs on grades and graduation rates.

If you volunteer to participate in this study, the researcher is asking that you to do the following: Complete a questionnaire electronically or during an interview with graduate student Geneva Rawlins, which should take no more than 1 hour in length. Questions will include but not limited to topics regarding program methods, academic requirements, and measures of success.

There are no anticipated risks or discomforts associated with this research.

There is no direct benefit to you personally for taking part in this study. However, we hope that the results of the research will help mentoring programs better understand how gardening activities may help students academically in the future.

We will keep your study data as confidential as possible. If we publish or present results of this study, individual names or other personally identifiable information will not be used.

You will not be paid for being in this study.

There are no anticipated risks or discomforts foreseen from participating in this survey.

Participation in research is completely voluntary. You have the right to decline participation or to withdraw from the study without penalty or loss of benefits to which you are otherwise entitled.

You can ask questions about this study at any time, now or later. You can talk to Geneva Rawlins or Dr. Timothy Borich, professor at Iowa State University at any time during the study. You can contact Geneva at genrawlins@gmail.com. Or you can contact Dr. Timothy Borich at borich@iastate.edu.
PARTICIPANT CONSENT

☐ I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study.
☐ I decline to participate in this study.

RESEARCH QUESTIONS

As a leader in the community supporting local youth urban gardening/agriculture programs...

1. Please explain principles or thought process behind gardening/urban agriculture program methods.

2. Are you affiliated with one particular program or several programs in the area?

3. Please explain your role with the program(s).

4. To the best of your knowledge, what was the motivation to begin such program(s)?

5. How are the programs executed?

6. Do you rely on key staff, volunteers, a combination of the two or other individuals to sustain the program?

7. Regarding mentoring of students: are mentorships formal or informal? (i.e., do adults involved with the organization become assigned to specific students?) Please explain.

8. Who are other key supporters and/or partners of garden/agriculture program(s) that you are aware of? Names are not necessary, but please explain roles or titles.

9. From your perspective, what are key benefits students gain by being involved in these programs?

10. From your perspective, should there be academic requirements (for example, a certain level of GPA) for students to be involved in these programs?

11. From your perspective, what potential improvements could be made current programs that you are aware of?

12. If you have witnessed any failed methodologies, what was learned and how the program was adjusted?
13. How do programs measure success for staff/volunteers?

14. How do programs measure success for students?
Appendix 3

Urban Agriculture as it relates to Academic Performance
Student Questionnaire

Purpose: The purpose of this study is to analyze how urban agriculture programs affect academic performance in high school students. This questionnaire is designed to collect information that will be compiled and analyzed for qualitative analysis.

Instructions and Additional Information: Please do not include your name on your questionnaire. All answers will remain confidential to the primary investigator and will not be shared with the organization you are involved with, parents or other individuals. The information will strictly be used to gain perspective of your experience during your involvement with your organization and the agriculture/gardening program.

If you need additional information or have questions or concerns regarding this questionnaire, please contact me, Geneva Tyler, at genrawlins@gmail.com or 765-586-2896.

1. Why did you choose [insert organization] and why did you choose to become involved in gardening and urban agriculture?

2. What unique benefits have you gained from the program?

3. Who do you see as the influential adults within your program, and why are they influential?

4. Did you have a mentor? If yes, please answer the following:
   o Were you assigned to a mentor or was the mentor informal (someone you looked up to)?
   o How did your mentor influence your personal goals and other personal growth?
   o How did your mentor influence you academically?

5. From your perspective, how did your participation in this program affect your grades?

6. What could have made your experience in this program better?

7. Would you suggest any changes to the program?

8. What are your personal future goals?
## Appendix 4

### Timeline

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<th>Task</th>
<th>Oct</th>
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<th>Dec '14</th>
<th>Jan-May '15</th>
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<th>July-May '16</th>
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Appendix 5

PARENT PERMISSION FOR CHILD TO PARTICIPATE IN A RESEARCH STUDY

Academic Success and Urban Agriculture
Iowa State University

Introduction
My name is Geneva Rawlins. I am a student in the Department of Interdisciplinary Studies through Iowa State University. I am working with my faculty advisor, Professor Timothy Borich on a research study. We invite your child, with your permission, to participate in this study.

Before you and your child decide whether he/she will be part of this study, it’s important for all of you to understand why we’re doing the research and what’s involved. Please read this form carefully. (Your child will receive his/her own assent form.) We encourage you to discuss the study with your child. If you or your child has questions about the research, feel free to ask us.

Purpose
We are doing this study to find out more about the influences of youth gardening programs on grades and graduation rates. We are inviting your child to participate because he/she is in their final two years of high school, and [organization’s name] have agreed that we can partner together on this research.

About 30 students involved with gardening and other urban agriculture youth programs will receive a questionnaire to record their experiences.

Procedures
If your child decides to participate and you give permission, we will ask him/her to participate in a questionnaire. The questionnaire should take no more than 1 hour to complete electronically.

Study location
The questionnaire will completed electronically.

Benefits
There is no direct benefit to you or your child personally for taking part in this study. However, we hope that the results of the research will help mentoring programs better understand how gardening activities may help students academically, and how your child has directly benefited from gardening.

Confidentiality
We will keep your child's study data as confidential as possible. If we publish or present results of this study, we will not use individual names or other personally identifiable information.

Compensation/Payment
You/Your child will not be paid for being in this study.

Risks or Discomfort
There are no anticipated risks or discomforts foreseen from participating in this survey.
Rights
Participation in research is completely voluntary. You have the right to decline to allow your child to participate or to withdraw your child at any point in this study without penalty or loss of benefits to which you are otherwise entitled. Your child has the same rights to decline to participate or withdraw from the study at any time.

Questions
You and your child can ask questions about this study at any time, now or later. You can talk to me or Dr. Timothy Borich, professor at Iowa State University at any time during the study. You can contact me at 765-586-2896 or genrawlins@gmail.com. Or you can contact Dr. Timothy Borich at borich@iastate.edu.

PARENT PERMISSION
If you decide that your student may participate in this study, please sign and date below.

If student is 18 yrs. or older:

___________________________________      __________    ________________________________
Student Participant Name (please print) Date Student Participant Signature

If student is younger than 18:

______________________________
Parent/Guardian's Name (please print) Date Parent/Guardian's Signature
Appendix 6

ASSENT TO PARTICIPATE IN RESEARCH

Academic Success and Urban Agriculture
Iowa State University

You are asked to participate in a research study conducted by Geneva Rawlins, graduate student in Community Development, and Dr. Timothy Borich, Ph.D. at Iowa State University. You were selected as a possible participant in this study because you are a senior in an Indianapolis Public School within proximity to a youth gardening program. Your participation in this research study is voluntary.

This study is being done to find out more about the influences of youth gardening programs on grades and graduation rates.

Please talk this over with your parents before you decide whether or not to participate. If you are under the age of 18, we will also ask your parents to give their permission for you to take part in this study. But even if your parents say “yes” you can still decide not to do this.

If you volunteer to participate in this study, the researcher will ask you to do the following: Complete a questionnaire electronically or during an interview with graduate student Geneva Rawlins, which would be no more than 1 hour in length. Questions will be related to unique experiences gained through the garden program, influential individuals within the program, how your academic performance was affected by the program and future goals beyond high school.

There are no anticipated risks or discomforts associated with this research.

There is no direct benefit to you personally for taking part in this study. However, we hope that the results of the research will help mentoring programs better understand how gardening activities may help students academically in the future.

We will keep your study data as confidential as possible. If we publish or present results of this study, individual names or other personally identifiable information will not be used.

You will not be paid for being in this study.

There are no anticipated risks or discomforts foreseen from participating in this survey.

Participation in research is completely voluntary. You have the right to decline participation or to withdraw from the study without penalty or loss of benefits to which you are otherwise entitled.

You can ask questions about this study at any time, now or later. You can talk to Geneva Rawlins or Dr. Timothy Borich, professor at Iowa State University at any time during the study. You can contact Geneva at genrawlins@gmail.com. Or you can contact Dr. Timothy Borich at borich@iastate.edu.

************************************
SIGNATURE OF STUDY PARTICIPANT

I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study.

________________________________________
Name of Participant

________________________________________  _________________
Signature of Participant                      Date
### Appendix 7

**Survey Questions and Responses**

The following are the questions administered to the project participants, along with their responses. Responses are not edited with the exception of removal of identifying details, such as names. All edits, such as removal of names, are identified by being bookended by [ ].

**Category 1: Student Survey Questions and Responses**

<table>
<thead>
<tr>
<th>Question 1. Why did you choose the organization you are involved with, and why did you choose to become involved in gardening and urban agriculture?</th>
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<tbody>
<tr>
<td>• I chose this organization because I am seeking to become a DNR officer in the future and this all coincides with the job.</td>
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<tr>
<td>• I have chosen to be in the organization because it makes me feel good knowing I am helping my community better.</td>
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<tr>
<td>• I choose to work with [this program] because they worked on projects that I had never worked on before. I love working on new things and that’s exactly what they gave me. I also wanted to learn about where my food came from and how I could grow it myself.</td>
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<tr>
<td>• I was assigned this class and I enjoy helping around and be apart of the farming community here.</td>
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<tr>
<td>• I didn’t choose to be in agriculture, it was given to me by my class.</td>
</tr>
<tr>
<td>• I didn’t choose this organization it was given to me. I became involved because it’s some fun to do.</td>
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<tr>
<td>• I chose this organization because I feel that it is very interesting. I enjoy what I do in the class everything we do is hands-on.</td>
</tr>
<tr>
<td>• I became involved with this organization through my advanced business class and agriculture was the main focus for the class.</td>
</tr>
<tr>
<td>• I didn’t choose to be apart of the establishment. It was chosen by the counselors. I enjoy it quite very much. It’s interesting to learn about plants.</td>
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<table>
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<tr>
<th>Question 2. What unique benefits have you gained from the program?</th>
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<tr>
<td>• I have learned better ways to slow down my work when using my hands and actually observe details.</td>
</tr>
<tr>
<td>• Learning more about animals and stretching my knowledge that I know about agriculture that would tremendously help me in my career when I get older.</td>
</tr>
<tr>
<td>• I've learned many, everywhere from learning where my food comes from but also something I didn't expect presentation. it showed me out to take charge of a problem and find a solution for it.</td>
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<tr>
<td>• I have learned how to deal with animals a little more than I already knew. I will also learn how to make soap with goat milk, which is very exciting.</td>
</tr>
<tr>
<td>• I received an A in the class</td>
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</tbody>
</table>
- I have gain knowledge of gardening
- The unique benefits are actually learning how to take care of animals and worms. We take care of chickens, feed the worms and grow plants.
- I have found the benefits of this program to be learning how to care for plants and animals.
- I have learned that you can’t overflow the plants because they will die. You have to water them frequently and feed them.

**Question 3. Who do you see as the influential adults within your program, and why are they influential?**

- My agriculture teacher and they influence me to do better on my work such as observing things during a lab and not just looking at one point.
- I see my advisor, [Advisor A] as one because she is not only helpful in what I want to do career wise but also very helpful in my everyday life that makes me know I can always look for for advise
- I see my advisor [Advisor A] as a very influential person in my life because no matter now much she has on her plate she always fins way to get it all done. She's always happy and never brings a bad face to school.
- [Advisor A] and [advisor B] are very influential and helpful. [Advisor B] encouraged me to join this class even though I wasn't sure if I wanted to. [Advisor A] taught me how to feed the chickens without any problems with the mean rooster. And she taught me why the chickens lay eggs that don't have chicks in them.
- [Advisor C] because she always encourages me and she helps.
- [Advisor C] because she grew up on a farm
- [Advisor A] and [Advisor B] because they got together and organized this organization. Which is very smart of them.
- [Advisor A] and [Advisor B] are influential in the process and organization of this program.
- I see [Advisor C] as an influential adult within this program because she helps and provides us with materials and teaches us about the plants.

**Question 4. Did you have a mentor? If yes, please answer the following:**

a. Were you assigned to a mentor or was the mentor informal (someone you looked up to)?
b. How did your mentor influence your personal goals and other personal growth?
c. How did your mentor influence you academically?

- No
- Yes, [Advisor A]
- no I don’t
- I do not have a mentor. I believe in being my own mentor.
- no
- No
- No, I do not have a mentor at this moment.
- No I do not have a mentor at the moment.
- No I did not have a mentor. Well considering the fact that I said I didn’t have a mentor it would be the same answer.

**Question 5. From your perspective, how did your participation in this program affect your grades?**

- The class was not hard to me since I personally have interest in this field but my grades stayed solid throughout the semester.
- Well, I have always done well in my grades but being there and being able to do activities made me thrive to better or my best at all things I do.
- In my perspective this program affected my grades in both positive and negative way. this helped me because I am way better at presenting then I was every before. it was bad because it took a lot of my time that sometimes I wouldn't have enough time for my other classes.
- My participation in this program hasn't impacted my grades in any way. My grades haven't gone up or gone down.
- It brought it up to an “A” in the glass.
- The participation gave me a good grade
- It really increases my grades because it's enough to work with but we also how extra time to spare.
- It did not affect my grades negatively.
- It helped exceedingly well and it boosted my grades up pass the average A+.

**Question 6. What could have made your experience in this program better?**

- Involvement with more hands on labs.
- Actually just being able to do activities longer and have better opportunities
- I feel like the only thing that could have made it better is if the our administrators would stand behind us instead of taking us as only kids and never gave us the time of day to prove them different. I feel like that would have made our chapter better.
- Having more animals.
- It could've been interesting
- I could have gone to a farm to learn more experience.
- Nothing, everything in this program has helped be for the better.
- There is little I can think of to improve my experience.
- Taking care of the plants better that we do now.
7. Would you suggest any changes to the program?

- Add more labs to the classes.
- NO
- I feel like everything is fine nothing I would change.
- More animals.
- Yes
- No
- I would like to have more animals. Other than that no everything is good.
- No, I would not change anything about this program.
- No I would not suggest any changes within the program but I think certain groups should be on their jobs and get to work.

8. What are your personal future goals?

- Complete my service in the Army, then after seek my career goal at becoming a DNR officer.
- Graduate from high school
  Get a full scholarship to a school of my choice
  Pursue my goal as a vegetarian
- I was to be a computer engineer and home to go into agriculture industry and be able to create knew ways to produce an abundance of food with out having to hurt any animals.
- I want to be a big business owner with a farm because it would be nice to have fresh crops and stuff. Also, I could expand and sell my crops to bigger businesses and make more money. Money is the motive.
- To leave this school and go to college, and become a business owner
- To own my own law firm and have a big house with a big family.
- My personal future goals are to become a nursing assistant and to be successful in anything I do.
- I personally wish to seek a career in engineering or business.
- My persona future goals are to become a successful person in life that people can look up too.
# Category 2: Program Sponsor Survey Questions and Responses

## 1. Please explain principles or thought process behind your program methods.

- We try to provide urban students with an agricultural education based on science and the increased demand for skilled workers in the life science field. We do not train our students on production agriculture at all, yet we focus on the inputs and outputs of the farm since our population will not likely ever be engaged in production agriculture.

- The program was designed to give students practical experience with entrepreneurship.

## 2. Who were the founders of the program, and what was their motivation to begin such a Program?

- [Founder 1] and [Founder 2] are the founders of our program. [Founder 1] is the school’s superintendent and [Founder 2] is a community leader and former Elanco employee. [Founder 2] has been actively involved with the FFA at the state and National level for many years and is a [local] resident. [Founder 1] many links to the agriculture industry including his father in law being a former Ag teacher that made him aware of the benefits of an Ag program. They decided that [the local] Schools' students would benefit from offering a pathway in Life Sciences/Agricultural Sciences.

- We have a 4-H club at our school, in which our members are involved in the poultry project. We began to raise chickens for the purpose of showing them in the County Fair. As the chickens began to lay eggs, we decided to sell the eggs. That was the beginning of our student-owned business. Our high school students are required to take a semester course on entrepreneurship. We added an advanced class in which the students run the egg business.

## 3. How is your program executed?

- We have 4 teachers in our program. 2 teachers teach only 8th grade students at [the local] Middle School. There are approximately 235 8th graders enrolled in the Introduction to Agriculture, Food, and Natural Resources course. The course serves as their 8th grade science course as well as high school credit for these students.

  We have another 2 teachers at the high school. At the high school we currently offer; Animal Science, Advanced Animal Science, Plant and Soil Science, and Natural resources. We plan to add a rotation of Food Science and Advanced Plant and Soil beginning in the fall of 2016. At the high school we have approximately 245 students enrolled in these classes.

  We have 1 FFA chapter. The middle and high school students come together for events on a monthly basis.

- Students begin by deciding which part of the business in which they would like to be. There is a choice of marketing, poultry, goats, and produce. The students do research on their part of the business and plan how their part of the business will run. There are teams that care for the chickens, collect and clean eggs, package and sell the eggs. The produce team plants seeds and care for the plants. They decide what to grow. This team is in the process of designing organic pots in which to sell herb seedlings to parents. The members of the goat team are perfecting their goat milk soap recipe.
4. Do you rely on key staff, volunteers, a combination of the two or other individuals to sustain the program?

- We rely on as many people as we can get involved. With the 4 teachers we try to spread things out. [Founder 2] serves as our advisory board president and volunteers his time with our program frequently.

- We rely on the Entrepreneurship/Personal Finance teacher to direct the class, and staff volunteers to assist with the program. It is a fairly new program so we are still modifying how the program works.

5. Regarding mentoring of students: are mentorships formal or informal? (i.e., do adults involved with the organization become assigned to specific students?) Please explain.

- We started a [career] program where we match up our students with professionals in their field of interest. We have the take assessments of their interests and career options. Then we use our advisory board as a springboard to find professionals for each of them to talk to about what they could possibly do as a career. Teachers are not assigned to a specific student or group as they continue throughout the program

- Mentoring is informal at this point. We bring in community members who are experts in the fields of poultry, goats, and farming to give them advice. As of now, we don't have long term mentoring, but hope to create that in the future.

6. Who are key supporters and/or partners of your garden/agriculture program? Names are not necessary, but please explain roles or titles.

- Our key supporters are the advisory board members who consist of business and industry (including Eli Lilly, Dow AgroSciences, ADM, Elanco, National Farm Bureau, Marion County Farm Bureau and local businesses), education representatives (including Purdue University, Ivy Tech, Vincennes, Marion County Extension, National FFA, BGCS administration and counselors) and parents of [the local high school] students (2 per class). And [Founder 2] our advisory board president

- Our supporters are two universities, a specialty grocery store, and a former mayor and the present mayor of Gary. We have been interviewed by all of the periodicals in our region, which has gotten us some supporters in the community. We've had some community members who have donated egg cartons and one who has written a grant for us to receive free seeds from a seed company.
7. From your perspective, what are key benefits students gain by being involved in this program?

- These students gain a general understanding of Agriculture Life Sciences that provides them opportunities that they never would have imagined living in an urban environment. We offer students a relevant and rigorous curriculum that will hopefully lead to them pursuing careers related to the Agricultural Life Science Industry.

- The students get "on the job" training in running a small business, application of in-class concepts, project based learning, higher order thinking, enhanced ability to work in teams, how to take the initiative as opposed to waiting to be told what to do, and ability to learn from mistakes.

8. What, if any, are the academic requirements (for example, a certain level of GPA) for students to be involved in your program?

- Anyone can be involved in the classes. Grade is not a requirement, however we would like them to pass. To be an FFA member they are expected to maintain good grades. We have not set a GPA or number of failures to maintain FFA membership.

- The only criteria are for the students to have taken the initial Entrepreneurship course and to have a desire for the work.

9. From your perspective, what potential improvements could be made to the program?

- We can always improve! We could get more community involvement from our students. Get more students involved and active in FFA roles. We are pursuing a greenhouse to be used for research in our programs. We would love to see more students enrolled in courses at the high school.

- Increasing the scope of the business, collaborating more with the community, for example being part of area farmers markets, increasing our space for the farm.

10. Could you explain any failed methodologies, what was learned and how the program was adjusted?

- We have not experienced any major failures at this time. Sometimes we are pulled to many ways at too many times therefore we feel overworked, however we have not been met with failed methodologies yet. I think a reason for that is that we have 4 teachers to talk about things and a great advisory board to use a compass and sounding board.

- This is just our third semester so it may be a bit too early to conclude that we have failed methodologies.
11. How does your organization measure success for yourself as a staff person/volunteer?

- We set annual goals for the students, chapter, and program. Annually we meet with the advisory board to discuss the previous year's goals and develop new goals for the upcoming year.

- We have not formally decided that yet, but I believe a large component is the size of the class and the students' feedback. We will have a much more formal evaluation in the near future.

12. How does your organization measure success for students?

- If they continue to sign up for class, join FFA, have fun, and encourage others to join.

- We measure success by the students' participation and if the business makes a profit. We also would like for the students to move the business along a bit further than the class before, for example, adding new customers or ideas for increasing production.

Category 3: Community Leader Survey Questions and Responses

1. Please explain principles or thought process behind gardening/urban agriculture program methods.

- At the [school] we provide students with access and opportunities to explore career fields in agriculture and animal science. These opportunities allow students to make informed and confident decisions about their future as we work to ensure all students are employed, enrolled, or enlisted.

- Urban students have little exposure to gardens and gardening education. We believe that being able to grow plants is a necessary life skill. Teaching students the basics of gardening through hands-on, real life activities is the program goal. Utilizing garden instruction programs that have state teaching standards identified with each lesson makes urban agricultural education a good fit for schools.

2. Are you affiliated with one particular program or several programs in the area?

- [One program]

- I am affiliated with one organization that can provide various programs.

3. Please explain your role with the program(s).

- Director of the [department]

- I am a Horticulture Educator with a university extension office. I provide educational programs along with guidance on establishing a garden and other agriculture projects on-site.
4. To the best of your knowledge, what was the motivation to begin such program(s)?

- Student interest, labor demand, and industry partnerships.
- Awareness of youth not understanding where their food comes from, how it grows, lack of availability of fresh produce and improving the health of the students.

5. How are the programs executed?

- These programs are executed as classes throughout the day and through extended learning opportunities such as FFA, SAE, and agricultural internships in collaboration with [a local urban agriculture initiative].
- Both in a classroom setting and in the gardens.

6. Do you rely on key staff, volunteers, a combination of the two or other individuals to sustain the program?

- We rely on our teacher, [instructor’s name] and local area community partners.
- Staff at the program site are responsible for all components. I do help them develop a committee that is responsible for various tasks (volunteers, weeding, teaching students, supplies, etc.).

7. Regarding mentoring of students: are mentorships formal or informal? (i.e., do adults involved with the organization become assigned to specific students?) Please explain.

- Not at this point.
- Each program determines student involvement. Typically, a classroom teacher teaches her own students. There are also programs that are ‘clubs’. These clubs are in charge of the projects and work/education is done either during or after school.

8. Who are other key supporters and/or partners of garden/agriculture program(s) that you are aware of? Names are not necessary, but please explain roles or titles.

- [An urban agriculture initiative in Indianapolis]
- Environmental companies and non-profits, universities, churches, garden and agriculture businesses and some corporations. Many of the supporters offer financial assistance, educational materials, volunteers, and supplies.

9. From your perspective, what are key benefits students gain by being involved in these programs?

- At the [school] we provide students with access and opportunities to explore career fields in agriculture and animal science. These opportunities allow students to make informed and confident decisions about their future as we work to ensure all students are employed, enrolled, or enlisted.
- They are able to grow and maintain plants and introduced to fresh produce. They also are given the opportunity to learn in an environment that is much more interactive.
10. From your perspective, should there be academic requirements (for example, a certain level of GPA) for students to be involved in these programs?

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<td>No. Students will need to be on track with the required courses for graduation and will need to maintain good attendance.</td>
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11. From your perspective, what potential improvements could be made current programs that you are aware of?

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<td>Better support from administration.</td>
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12. If you have witnessed any failed methodologies, what was learned and how the program was adjusted?

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<td>Sustainability needs to be addressed from the beginning. Not a one-person job.</td>
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13. How do programs measure success for staff/volunteers?

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<td>A variety of ways. Amount of involvement is usually the method.</td>
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14. How do programs measure success for students?

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<td>Pre-post tests are typically used. Older programs may measure progress in various disciplines that are used in the garden (math, English, science, history, etc.).</td>
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