Determining the Benefits of Implementing a Service Learning Project in an Agriscience II Classroom

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Submitted to the Master of Arts in Education Program of Defiance College in partial fulfillment of the requirements for the degree of Master of Arts in Education

June, 2009

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Abstract

Eight students enrolled in an Agriscience II classroom in a rural town located in a Midwest state participated in the study. The purpose of this study was to determine if students' perception of their role in the community changed as a result of participating in a service learning project in an Agriscience II instructional class in an agricultural education program. The study was conducted with the students' everyday over a two-week period in mid May of the 2008-2009 school year. The data collection tools that were used to assess the change in students' perception were a Likert scale, a pre-intervention writing prompt, and a post service learning reflection. The results of the study suggested that students' perception of their role in the community might have changed due to the intervention.
Acknowledgements

I wish to acknowledge all those people who gave their guidance and support toward the successful completion of this project. Sincere appreciation is extended to my advisor, Dr. Jo Ann Burkhardt, for her constant direction, patience, and encouraging words throughout the entire master’s project. Thank you to my parents, Doug and Barbara Miller, whose lifetime of support has been greatly appreciated in my educational goals. Most of all, my sincere gratitude is given to my husband, Brock, and daughter, Bailee. They are to be commended for their patience during the preparation and completion of this project and for their constant support and understanding throughout my educational goals and aspirations.
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Chapter 1: Introduction

As an agricultural education teacher that has been actively involved in implementing service learning programs in Agriscience II classes, it became apparent that there was very little academic knowledge gained by students as a result of the service learning programs. The researcher decided to determine the benefits of implementing service learning as a pedagogy in Agriscience II instructional classes in an agricultural education program in a rural comprehensive high school.

Through a review of the professional literature the teacher investigated the components of highly effective service learning programs. Service learning was commonly identified as a pedagogical approach in which students link what they have learned in the classroom with the experiences gained through active participation in thoughtfully organized service experiences that meet actual community needs (Billing, 2000a; Boyle-Basie & Kilbane, 1999; Buchanan, Baldwin, & Rudisill, 2002; Eyler, 2002; Gololdberg, Richburg, & Wood, 2006; McClaim, Diambra, Burton, Fuss, & Fudge, 2008). Furthermore, the researchers (Billing, 2000a: Eyler, 2002; Eyler and Giles, 1999; Goldberg et al., 2006; McClaim et al., 2008) stated that high quality service learning experiences should meet authentic community needs, academic objectives should be applied, structured reflection should be implemented, and students should be engaged in the planning and implementing of service experience. There were five major benefits from incorporating service learning as a pedagogy into a public school classroom indicated by the reviewed literature.
Statement of the Problem

The purpose of this project was to determine the benefits of implementing service learning as a pedagogy in Agriscience II instructional classes in an agricultural education program in a rural comprehensive high school.

The research questions were:

1. How did the professional literature define service learning?
2. How was service learning as a pedagogy implemented in public school classrooms, according to the professional literature reviewed?
3. According to the professional literature reviewed, what were the benefits of implementing service learning as a pedagogy in public school classrooms?
4. What were the benefits of implementing service learning pedagogy in Agriscience II instructional classes in an agricultural education program in a rural comprehensive high school?

Justification

The researcher became interested in service learning during a discussion prompted by the professor during a graduate class that was taken as part of a Master’s of Arts in Education Program. The discussion centered on the use of service learning as a teaching strategy for academic content and social skills. The researcher believed in the importance of providing students the opportunity to work with community partners from prior experience as an agricultural education instructor, but wanted to investigate the most effective strategies, implementation, and benefits of service learning as a pedagogy, because the researcher had not used service learning as a pedagogy in the classroom. The researcher hoped to determine the benefits of implementing service learning as a pedagogy in Agriscience II classes in an
agricultural education program in a rural comprehensive high school. Therefore, the researcher wanted to implement service learning as a pedagogy in Agriscience II class to determine the benefits of implementation of service learning as a pedagogy so that other teachers within the rural comprehensive high schools might want to use this type of instruction in their classrooms.

Definition of Terms

**Agriscience**- The agriscience program addressed skills in both vocational areas for the workforce and also those areas of academia necessary for college (animal science, plant science, reproductive genetics, leadership, agribusiness, etc.) (Chiasson & Burnett, 2001).

**Agricultural Education Program** – Agricultural education instruction consisted of three basic intra-curricular components: 1) classroom instruction, 2) experiential learning through supervised experiences, and 3) leadership activities (Shelley-Tolbert, Conroy, & Dailey, 2000).

**High School**- A rural comprehensive high school that included grades ninth through twelfth with approximately 600 total students.

**Service Learning** – Service learning was a pedagogical approach in which students learn and develop through active participation in thoughtfully organized service experiences that meet actual community needs (Buchanan, A.M., Baldwin, S.C., & Rudisill, M.E., 2002).

Limitations and Appropriate Use of Results

This project was conducted in Agriscience II classes as part of an agricultural education program in a rural comprehensive high school located in the Midwest. The study was limited by the small number of participants that were demographically homogeneous, coming from similar racial and economic backgrounds. The results were based on service learning as a pedagogy implemented during a nine week period. Because this study was implemented in Agriscience II classes in an agricultural education program in a rural comprehensive high school with a small
number of participants, the results may not be generalized to other high school Agriscience classrooms.
Chapter II: Review of the Literature

The purpose of this project was to determine if students perception of his/her role in the community changed as a result of participating in a service learning project in a Agriscience II instructional class in an agricultural education program in a rural comprehensive high school. The research questions were:

1. How did the professional literature define service learning?
2. How was service learning as a pedagogy implemented in public school classrooms, according to the professional literature reviewed?
3. According to the professional literature reviewed, what were the benefits of implementing service learning as a pedagogy in public school classrooms?
4. What were the benefits of implementing service learning pedagogy in Agriscience II instructional classes in an agricultural education program in a rural comprehensive high school?

Research Questions #1: How did the professional literature define service learning?

In order to answer research question #1, a review of the professional literature was conducted. According to the literature, service learning was widely defined, however many researchers agreed on the basic concept of service learning. Service learning was commonly identified as a pedagogical approach in which students link what they have learned in the classroom with the experiences gained through active participation in thoughtfully organized service experiences that meet actual community needs (Billing, 2000a; Boyle-Basie & Kilbane, 1999; Buchanan, Baldwin, & Rudisill, 2002; Eyler, 2002; Gololdberg, Richburg, & Wood, 2006; McClam, Diambra, Burton, Fuss, & Fudge, 2008). Furthermore, Eyler (2002) stated that in service learning students were
encouraged to connect their personal goals and values with academic study and to apply what they learned to real-world situations. According to the reviewed literature, connecting academic study to community service was a key to building enthusiasm for civic participation, however the evidence of increased civic participation through service learning has lagged behind practice. There has been reason to believe that the modest increase in civic participation of participants of service learning may be in part due to the great variability in implementation of service learning programs (Elyer & Giles, 1999).

Many researchers (Billing, 2000a; Eyler, 2002; Elyer & Giles, 1999; Goldberg et al., 2006; McClam et al., 2008) reported that high quality service learning needed four key fundamental components. First, they stated that the service learning experiences should meet authentic community needs. Secondly, they agreed that academic achievement and learning objectives should be applied in the service learning experience. Thirdly, they conveyed that structured time should be allowed for students to reflect about the service experience. Finally, they expressed that students should be engaged in the planning of the service learning experience with actively collaborating with each other along with community members. Goldberg et al. (2006) clarified that through active and thoughtful engagement in learning, students develop the ability to reflectively and critically question assumptions which lead to the further development of problem solving and decision making skills. Therefore, service learning engaged students by combining classroom theory with authentic field-based experiences (McClam et al., 2008).

Service Learning Aligns with Agricultural Education

Goldberg et al. (2006) referred to service learning as an experiential and reflective problem-based teaching approach. In comparison to service learning, Dyer and Osborne (1996) reported that the problem based approach was effective in increasing the problem solving ability
of students within agricultural education. The experiential focus of secondary agricultural education has been a longstanding creed for agricultural educators (Roberts, 2006). Researchers in agricultural education (Doolittle & Camp, 1999; Knobloch, 2003; Roberts, 2006) reported that John Dewey is arguably the father of experiential learning. According to Billings (2000), Buchanan et al. (2002) and Giles and Eyler (1994), John Dewey’s philosophical approach to experience and education was considered the roots of service learning. Specifically, Giles and Eyler stated that Dewey’s emphasis on the principles of experience, inquiry, and reflection were the key elements of a theory of knowing in service-learning. According to the professional literature, John Dewey’s philosophical approach of education and experience was identified by researchers in agricultural education as well as service learning.

In summary, Billings (2000a), Boyler-Baise and Kilbane (1998), Buchanan et al. (2002), Eyler (2002), Goldberg et al. (2006) and McClaim et al. (2002) suggested service learning was considered a pedagogical approach that linked academic study with the experiences gained through actively engaging in thoughtful organized service experiences that meet actual community needs. In fact, Billing (2000a), Eyler (2002), Eyler and Giles (1999), Goldberg et al. (2006) and McClaim et al. (2008) referred to four fundamental components needed for high quality service learning. The researchers stated that service learning experiences should meet authentic community needs, academic objectives should be applied, structured reflection should be implemented, and students should be engaged in the planning and implementing of service experience. In addition, agricultural education researchers (Doolittle & Camp, 1999; Knobloch, 2003; Roberts, 2006) as well as service learning researchers (Billings, 2000a; Buchanan et al., 2002; Giles & Eyler 1994) identified John Dewey’s philosophical approach the foundation of experiential learning which aligns with agricultural education and service learning, respectively.
Following the review of the professional literature pertaining to the definition of service learning, it was necessary to determine how was service learning as a pedagogy in a public school system. 

Research Questions #2: How was service learning as a pedagogy implemented in public school classrooms, according to the professional literature?

In order to answer research question #2, a review of literature was conducted. According to the reviewed literature, service learning was a pedagogy that engaged students in an active, constructive process of learning. The review of literature indicated that implementation of high quality service learning need four key components. The key components were high quality placements sites meeting authentic community needs, activities that enabled students to engage in planning and implementing of service learning with collaboration of community members, academic learning objectives in classroom linked to service learning, and structured time that allows students to reflect about the service learning experience.

Placement Sites

According to the reviewed literature, high quality placements sites within in a community were a necessity for a high quality service learning experience. Elyer and Giles (1999) stated that high quality placement sites included meaningful work, provided important responsibility to the student, incorporated a variety of challenging tasks as well as students should have a direct working relationship with community partners. Furthermore, they stated that students should receive support and feedback from community partners. Ngai (2006) supported this idea that well-organized and relevant placements within communities are imperative for high quality service learning experiences. In addition, Ngai stated that facilitating connections between the students and the community partners were necessary.
Student Ownership

Researchers (Eyler & Giles, 1999; Nelson & Eckstein, 2008) stated that allowing students to make the decisions involving the planning and implementation of the service learning was a key to service learning as a pedagogy. Nelson and Eckstein (2008) reported that service learning should allow the youth themselves to be involved in talking about their concerns and interest, solving problems, and making decisions so the students construct their own identities in the planning and implementation of the service learning. For example, Nelson and Eckstein developed a service learning model that created a competition among students for funding for service learning projects like applying for a federal grant. They stated students competed for sub grants by writing proposals for service learning projects that focused on social and environmental issues that concerned them. Furthermore, Nelson and Eckstein reported that the more responsibility that was given to the students during the planning and implementation of the service learning experience compelled students to take on a greater degree of ownership of the actual service learning project. Soslau and Yost (2007) agreed that students should be provided the opportunity to be their own advocates of service learning experiences that relate to community issues and concerns conveyed by students.

According to the professional literature, highly effective implementation of service learning required students to have the opportunities to be the planners and implementers of service learning projects from the beginning to the end. Within the projects, teachers were to facilitate the process specifically making sure the application of academic content were provided in the service experience.
Application of Academic Content

The literature reviewed indicated that it could be concluded that an important component of service learning was the application of academic learning objectives. According to Nelson and Eckstein (2008), classroom instruction became more meaningful as students apply learning objectives to real life situations. Furthermore, Eyler and Giles (1999) stated that application of academic learning objectives referred to the degree in which students could link what they are doing in the classroom to what they are experiencing in the community and vice versa. In fact, Eyler and Giles reported that the strongest predictor of learning outcomes, problem solving, and critical thinking was application.

The review of literature indicated that close attention should be made to the connections between the subject matter of the class and issues raised by service learning. According to researchers (Bolye-Baise & Kilbane, 1999; Elyer & Giles, 1999, Olszewshi, Kubilius, Donahue, & Weinholt, 2008) the specific tasks that students performed in the community and the goals of the class should align with one another. They stated that it was easy finding service to match course content, however the challenge was matching the specific task completed in the service experience with classroom activities and goals. In order to make this connection, the research suggested that reflection was the critical link that ties students experience in the community to academic learning.

Reflection

According to Eyler (2002), service learning provided the opportunity for students’ assumptions about particular social problems and community issues to be challenged through reflection and experience. She stated that reflection on these conflicts or surprises was the process by which individuals develop the capacity to understand social problems and community
issues. In addition, she reported that the process of restructuring the service learning experience in one's conceptual framework does not necessarily occur automatically with students. Stavrianopoulos (2008) supported the idea that in order to transform the service experiences into a learning process, instructors must provide sufficient opportunities, space, and guidance for students to reflect upon the service experience. According to the professional literature, reflection occurred before, during, and after service learning experiences.

Researchers (Boyle-Baise & Kilbane, 1999; Eyler, 2002; Eyler & Giles, 1999) suggested that activity reflections could be conducted in a variety of ways. They stated that students could write a letter to themselves which identified what they expect to see and do in the service experience that would be opened at the end of the experience. Secondly, expectations could be noted in a journal entry. Thirdly, students could create a personal goal statement outlining what they expect to see and hope to learn. Finally, organized discussions could be conducted in the classroom. The studies (Boyle-Baise & Kilbane, 1999; Elyer, 2002; Eyler & Giles, 1999) suggested that reflection activities would allow students to surface preconceptions about community issues, which may compel students to be more observant during service experience.

According to Eyler (2002) and Eyler and Giles (1999), effective reflection during service was an important component of a continual process of reflection from before to after the service learning experience. They stated that experiential learning rested on a cyclic process of action and reflection on that action. In fact, Eyler (2002) stated that ideally service learning is conducted using a problem based learning approach which is intrinsically reflective. However, the studies (Boyle-Basie & Kilbane, 1999; Eyler, 2002, Eyler and Giles, 1999) suggested that structured reflection is key to make service learning effective in going beyond mere description
of experience to making connections between academic content and service learning experiences.

The research studies suggested that written reflection and group discussions were effective components to implement during service learning. Staurianopoulos (2008) specifically stated that journal writing provided students with the opportunity for reflection, self and subject matter exploration, and most importantly for making links between the service experience, the academic content, and personal experiences. According to the research reviewed, discussion reflection was a popular choice because of flexibility of implementation. However, Elyer and Giles (1999) noted that facilitators have to be cautious that students are moving beyond just sharing feelings and experiences to actually questioning their preconceptions about community issues and concerns. They also stated a challenge faced by facilitators during a service learning experience was finding time for reflection during the experience.

According to the reviewed literature, reflection essays, class discussions, multimedia projects, and community presentations were examples of after service learning reflective activities that could be implemented. According to Eyler (2002), reflective essays allowed students to trace their arc of learning and can be cultivated with peer discussions. She stated that when students share their conclusions in class with others, students were more likely to be engaged in exploring the issues in the community. According to Nelson and Eckstein (2008), student created scrapbooks of the service learning experiences as well as videos that allowed students to reflect on issues facing communities are examples of effective reflection. Lastly, Eyler stated that students needed to present their work and reflection with the community partners. According to the professional literature, continually structured reflection was the component of implementation that was critical for students to make the connection of the service
learning experience to academic curricula as well as further development of critical thinking skills.

In summary, the reviewed literature indicated there were four key factors to consider when implementing a high quality, meaningful service learning projects. First, Elyer and Giles (1999) and Ngai (2006) suggested that well-organized, high quality placements sites that incorporated meaningful work requiring students to assume responsibility while working with community partners were necessary for successful service learning. Secondly, the researchers (Elyer & Giles, 1999; Nelson and Eckstein, 2008) reported that allowing students to make decisions with guidance and support of teachers was critical for allowing students to take ownership of the service learning experience. Thirdly, service learning projects should be linked directly to academic learning objectives, according to Baldwin et al. (2007), Boyle-Baise and Kilbane (1999), Eyler and Giles (1999), Lee et al. (2008) and Nelson and Eckstein (2008). They stated that the tasks and goals of the class should align with the tasks of the service learning project. Finally, the studies suggested that structured, continually reflection before, during, and after service learning projects was ultimately the critical link that tied students experience in the community with academic learning. After having determined the key components of implementing a high quality service learning experience, the researcher then reviewed the professional literature to find out about the benefits of implementing service learning as a pedagogy in a public school classroom.

Research Questions #3: According to the professional literature, what were the benefits of implementing service learning as a pedagogy in public school classrooms?

In order to answer research questions #3, a review of literature was conducted. The review of the professional literature revealed that there where five key benefits of implementing
high quality service learning in public school classrooms. The benefits of implementing service learning as a pedagogy were the strengthening of personal qualities and skills necessary for social justice, enhanced the curriculum of academic subjects through application that increased academic achievement, integrates career development into the classroom, increases self-confidence, and aids in creating a school atmosphere conducive for students, teachers, and community partners to work together.

**Social Justice**

According to Eyler and Giles (1999), well-designed service learning programs strengthened the personal qualities and interpersonal skills of students which were necessary for effective citizenship. They stated that high quality community placements, within service learning, where students have real responsibilities and challenging work led students to report seeing community issues and concerns from a social standpoint in new ways. As a result, they suggested that students had an increase in understanding of the importance of social agencies in the community. Billing (2000b) agreed that service learning prompted students to develop a sense of civic and social responsibility because of the opportunity to develop citizenship skills in the service learning experience. In fact, she stated that service learning provides an avenue for students to become active, positive contributors to society.

**Academic achievement**

Goldberg et al. (2006) stated that students were motivated and empowered to continue to learn as a result of the implementation of service learning as a pedagogy because the learning activities (goals, tasks, outcomes, and assessment protocols) were meaningful, challenging, and intrinsically rewarding to the student. Elyer (2002) suggested that students learn more deeply through service learning because students are challenged through experiences and reflection to
explore and question their fundamental assumptions about their world. As a result, Nelson and Eckstein (2008) reported that implementation of service learning into the classroom enhances the curricula of academic subjects. Furthermore, they stated that service learning provides the opportunity for students to acquire knowledge and skills in a meaningful atmosphere necessary to motivate students to continue to learn. In fact, they concluded that classroom instruction became more meaningful as students apply learning objectives to real life situations.

Elyer and Giles (1999) reported that students found it easier to make sense of academic curricula because of the hands on experience which motivated students to learn due to the ability to connect academic content to a real world experience. Soslau and Yost (2007) agreed that students who participated in service learning were more likely to make real-world connections and have a better understanding of learning objectives. In fact, they concluded that students increased their benchmark test scores specifically with increased achievement in mathematics and reading upon completion of the service learning project.

**Career Exploration**

According to Billing (2000b), service learning helped students to become more knowledgeable and realistic about future careers. She stated that service learning allowed students to acquire specific knowledge about the careers directly related to the service they performed. In addition, Nelson and Eckstein (2008) reported that service learning integrates career development into the classroom through hands on experience and self discovery. They stated that students work side by side with community partners and learn first hand about career opportunities and the skills necessary to pursue the careers explored by the service learning experience. In fact, McClaim et al. (2008) reported that career confirmation was significant
among students participating in service learning projects that related to the students chosen career path.

**Self Confidence**

The review of literature indicated that service learning had a positive effect on the personal development of public school youth. Billings (2000b) suggested that students who participated in service learning were less likely to engage in risk behaviors. A study conducted by Soslau and Yost (2008), concluded that there was an increase in attendance and decrease in suspension with participants in a service learning project. They stated that these occurrences were indicators of enhanced motivation and self confidence provided by the service learning experience. Ngai (2006) concluded as well that a heighten sense of self confidence was documented as a result of service learning. In addition, Lee et al. (2008) reported as well that students gained self confidence, a sense of personal responsibility and an increased desire to help others due to service learning.

**School Climate**

According to Billings (2000), service learning improves the overall school climate. She stated service learning resulted in a greater mutual respect between teachers and students. In fact, she suggested that service learning leads to schools and youth to be perceived as an important part of the community. A study conducted by Nagi (2008) concluded that students shouldered more responsibility of greeting visitors, giving campus tours, orienting new students to the school and helping out with clerical task in the office after the service learning project. In summary, service learning builds school cohesions, positive relationships among students, among teachers, and between students and leaders in the school.

*Benefits align with Service Learning in Agricultural Education*
According to the reviewed literature pertaining to service learning in agricultural education, the benefits of service learning, in agricultural education, aligned with the body of service learning professional literature. Webster and Hoover (2006) reported that benefits ranged from students learning about themselves to connecting with their communities to dealing with diverse audiences. They stated that service learning provided a grounded experience for students to learn from their own peers and the community. In addition, they reported that the service learning experience began candid discussion on diversity and preconceived notions around race and culture among traditional agriculture students and minority students. They also reported that students were challenged to think beyond what they had been taught and heard in the classroom. In summary, they reported that students saw agricultural education from a new perspective and students suggested that developing an engaging activity such as a service learning project should be incorporated into the core curricula and foundation of agricultural departments, especially in FFA and 4-H.

In summary, the professional literature indicated five key benefits from implementations of highly effective service learning as a pedagogy. First, Eyler and Giles (1999) and Billing (2000a) suggested that service learning strengthens students personal and interpersonal skills necessary for active and effective citizenship. Secondly, the researchers (Eyler, 2002; Eyler & Giles, 1999; Goldberg et al., 2006; Nelson & Eckstein, 2008; Soslau & Yost, 2007) reported that the implementation of service learning which encompasses learning activities that are meaningful, challenging, hands on, and intrinsically rewarding enhances academic curricula and empowers students to learn more deeply because of the application of learning objects to the real world. Next, Billing (2000b), McClaim et al. (2008) and Nelson and Eckstein (2008) suggested that service learning allows students the opportunity to explore careers directly related to the
service learning experience. Then, the researchers (Billing, 2000b; Lee et al. 2008; Nagi, 2006) stated participants gained self confidence as a result of participating in a service learning experience. Lastly, school climate benefited from the service learning projects according to Billings (2000b), and Ngai (2008). They stated specifically students were more apt to engage in completing task along side other students, teachers, school leaders, and community members. In comparison to the benefits identified from the body of professional literature on service learning, the limited research in agricultural education on service learning does align.

**Conclusion**

In conclusion the literature reviewed defined service learning as a pedagogical approach in which students link what they have learned in the classroom with the experiences gained through active participation in thoughtfully organized service experiences that meet actual community needs (Billing, 2000a; Boyle- Basie & Kilbane, 1999; Buchanan et al., 2002; Eyler, 2002; Goldberg et al., 2006; McClam et al., 2008). In addition, Eyler (2002) suggested that in service learning students are encouraged to connect their personal goals and values with academic study to apply what they learned to real-world situations. Furthermore, agricultural education researchers (Doolittle & Camp, 1999; Knobloch, 2003; Roberts, 2006) as well as service learning researchers (Billings 2000; Buchanan et al., 2002; Giles & Eyler 1994) identified John Dewey’s philosophical approach the foundation of experiential learning which aligns with agricultural education and service learning, respectively.

The professional literature reviewed concluded that there were four key components to implementing a high quality, effective service learning experience. First, Elyer and Giles (1999) and Ngai (2006) suggested that well-organized, high quality placements sites that incorporated meaningful work requiring students to assume responsibility while working with community
partners were necessary for successful service learning. Secondly, the researchers (Elyer & Giles, 1999; Nelson & Eckstein, 2008) suggested that allowing students to make decisions with guidance and support of teachers was critical for allowing students to take ownership of the service learning experience. Next, service learning projects should be linked directly to academic learning objectives, according to Baldwin et al. (2007), Boyle-Baise and Kilbane (1999), Eyler and Giles (1999), Lee et al. (2008) and Nelson and Eckstein (2008). They stated that the tasks and goals of the class should align with the tasks of the service learning project. Finally, the studies suggested that structured, continually reflection before, during, and after service learning projects was ultimately the critical link that tied students experience in the community with academic learning.

There were five major benefits from incorporating service learning as a pedagogy into a public school classroom indicated by the reviewed literature. First, Eyler and Giles (1999) and Billing (2000b) reported that service learning strengthens students personal and interpersonal skills necessary for active and effective citizenship. Next, the researchers (Eyler, 2002; Eyler & Giles, 1999; Goldberg et al., 2006; Nelson & Eckstein, 2008; Soslau & Yost, 2007) suggested that implementation of service learning which encompasses learning activities that are meaningful, challenging, hands on, and intrinsically rewarding enhances academic curricula and empowers students to learn more deeply as a result of the application of learning objects to the real world. Then, Billing (2000b), McClam et al. (2008) and Nelson and Eckstein (2008) stated that service learning allows students the opportunity to explore careers directly related to the service learning experience. Fourthly, Billing (2000b), Lee et al. (2008), Ngai, (2006) concluded that participants gained self confidence as a result of participating in a service learning experience. Lastly, school climate benefited from the service learning projects suggested by
Billing (2000b), and Ngai (2008). In comparison to the benefits identified from the body of professional literature on service learning, the limited research in agricultural education on service learning does align.

Having reviewed the professional literature pertaining to service learning as a pedagogy, it was necessary to develop procedures and instruments to gather data. These needed to be developed in order to collect data to determine what were the benefits of implementing service learning as a pedagogy in Agriscience II instructional classes in an agricultural education program in a rural comprehensive high school.
Chapter III: Methods and Procedures

The purpose of this project was to determine if students perception of his/her role in the community changed as a result of participating in a service learning project in an Agriscience II instructional class in an agricultural education program in a rural comprehensive high school.

The research questions were:

1. How did the professional literature define service learning?
2. How was service learning as a pedagogy implemented in public school classrooms, according to the professional literature reviewed?
3. According to the professional literature reviewed, what were the benefits of implementing service learning as pedagogy in public school classrooms?
4. What were the benefits of implementing service learning pedagogy in Agriscience II instructional classes in an agricultural education program in a rural comprehensive high school?

Participants

Eight agricultural education students participated in the study. The students were enrolled in an Agriscience II classroom in a rural town located in a Midwest state. Four students were female and four students were male. One of the participating students was Hispanic and seven students were Caucasian.

Treatment/Intervention

The intervention used during this project was implementation of service learning as a pedagogy with an Agriscience II instructional class in an agricultural education program. The review of literature indicated that implementation of high quality service learning has four key components. According to the literature, the key components were high quality placement sites
meeting authentic community needs, activities that enabled students to engage in planning and implementing of service learning with collaboration of community members, academic learning objectives in classroom linked to service learning, and structured time that allow students to reflect about the service learning experience. The teacher applied these four key components of high quality service learning in the design of a plant science instructional unit.

To begin the intervention phase of the project, the teacher identified five educational objectives to be taught in a plant science instructional unit. The five educational objectives were as follows: 1) describe nutrient sources, 2) determine plant nutrient requirements and functions for optimum growth, 3) determine the environmental factors that influence and optimize plant growth, 4) describe nutrient application methods and appropriate practices, and 5) apply nutrients to plants for economic growth. The teacher then determined, based on the opportunities available within the community to implement a service learning activity aligned with the academic content of the plant science unit, that the following educational objectives would be accomplished: 1) determine environmental factors that influence and optimize plant growth, 2) describe nutrient application methods and appropriate practices, 3) apply nutrients to plants for economic growth, and 4) describe how an individual can make a positive difference in his/her community. The teacher then developed instructional strategies that would be implemented in the classroom that would aid the students’ in meeting the identified educational objectives.

The teacher implemented five activities in the classroom over a four day period to increase the students’ knowledge of plant nutrition. The first activity (see Appendix A for copy of Life Staining Processes of Plants) was a concept map activity. The researcher had prepared a concept map that illustrated the concepts of photosynthesis, respiration, and transpiration. Students worked with a partner to complete the concept map based on activating prior
knowledge of these basic plant nutrition concepts. The teacher facilitated the process by observing and guiding students when necessary. A discussion of the photosynthesis, respiration, and transpiration then was held after completion of the group work led by the researcher.

The second activity used was a background knowledge probe activity. Students were divided into groups of four and given a large piece of chart paper (see Appendix B for copy of Factors Affecting Plant Growth). The students divided the chart paper into four columns, each column was given a heading: air, water, light, and plant media. The group was to determine what role each heading played in plant growth by collaborating with one another. Each group presented the information that was developed in each group, and then the teacher led a discussion on the students’ findings.

The third activity used was a categorizing grid. The teacher gave each student an envelope that contained 16 plant nutrients and functions along with a worksheet that was designed to guide students to categorize the 16 plant nutrients and functions based on the idea of macronutrients and micronutrients (see Appendix C for copy of Macronutrients and Micronutrients). Once students completed the activity they then were guided by the researcher to collaborate with another student to check each others findings.

The fourth activity used was lecture with guided notes. The teacher led the students through a 10 minute power point presentation on the concepts of Ions, Soil Acidity and Alkalinity. Students were given guided notes to complete (see Appendix D for copy of Ions, Soil Acidity, and Alkalinity Guided Notes).

The fifth activity was a laboratory activity. Students were assigned a lab partner and given a lab instructional sheet that conveyed the materials and procedures that were completed by the student (see Appendix E for copy of Fertilizer: What you need to know!). The lab activity
focused on the application methods of fertilizers and determining the proper fertilizer for different plants. Students were given case studies which required students to determine which type of fertilizer, application, and planting media methods was the best for each case. The student then had to demonstrate the proper method of fertilizer application by planting the plants into pots with the proper growing media.

After completing the five activities that aligned with the plant science academic content, the teacher then introduced an activity that would increase students awareness of making a positive difference with in his/her community. The activity consisted of a round table discussion about the importance of service within the community that was led by a former agricultural instructor and member of the city tree commission, a former FFA member and a well respected community member and employee of the soil and water conservation district. After the round table discussion was completed, students had to complete a one page reflection paper that addressed the students’ feelings on the importance of service within his/her community (see Appendix F for copy of Community Panel Reflection).

The teacher then followed up the reflection activity with the introduction of a service learning opportunity within the community. There were 16 flower barrels that were annually planted in the spring in the downtown area of the community. The teacher presented the students with this opportunity but explained that several decisions had to be made that would be left up to the students. Students were then broken into groups of four to design the best flower barrel based on creativity, plant hardness, and the established budget. Students had to work in their group to develop a presentation to present to the class on each groups decisions. The class then voted on which group had the best design for the downtown area. The group that was chosen then were the leaders for actually implementing the activity by assigning the rest of the students
to specific tasks that were completed such as contacting the greenhouse to purchase the necessary supplies and the village to determine planting date. The students completed the service learning activity by planting all 16 flower barrels with the proper flowers and applied the correct type of fertilizer and growing media for optimal plant growth in the downtown area. The researcher led informal reflection discussions during the activity. The teachers asked questions that allowed students to share feeling, concerns, and make recommendations for future activities, as well as questions about how the activity applied plant science content.

Finally, the students completed a final reflection assignment after completion of the flower barrels that allowed student to reflect on the past 8 days of activities. Students completed a post service reflection worksheet (see Appendix G for copy of Post Service Learning Reflection).

Instruments/Protocols

The researcher used three different instruments to collect data during this project. They were: 1) a Likert scale, 2) the pre intervention writing prompt, 3) the post service learning reflection. The three instruments were developed by the researcher.

One of the instruments that was used to collect data that was developed and administered by the researcher was a Likert scale consisting of one prompt. This instrument assessed the students' perception about being an active, positive contributor of the community. The students had to circle a number from one to five that best represented their perception of being a contributing member of the community. The Likert scale was administered prior to the intervention as well as after the intervention.
The second instrument that was developed by the researcher that was used to collect data was a pre intervention writing prompt. The instrument had students identify and discussed their perceptions of their role in the community.

The last instrument that was used to collect data was a post service learning reflection. The instrument was developed and administered by the researcher upon completion of the intervention. The reflection focused on identifying how the students' view of their role in the community changed as a result of the service learning project.

Procedures

Before the study was implemented, the teacher contacted the school principal, in person, to explain the purpose and nature of the study and asked for permission to conduct the study in her classroom. In addition, the teacher spoke to one parent of each student about the purpose of the project by telephone conversation or face-to-face conversation. In the conversation with parents, it was discussed that the teacher was involved in a Masters of Arts Educational program. There were no objections from the parents. Then with the approval of the principal and the parents or guardians of the students, the teacher implemented the project.

The researcher conducted her project in her Agriscience II classroom and in the downtown community of a rural town in a Midwest state. The activities were conducted with the students everyday over a two week period for a length of approximately 40 minutes each day. The instruments were administered to the entire Agriscience II class.

Timeline

The project began in April of the 2008-2009 school year. The researcher met with the building administrators in early April to explain the project. Parents of the students in the Agriscience II class were notified by telephone conversation or face-to-face conversion in mid
April. The pre service learning writing prompt and Likert scale were administered on May 11. The intervention began on May 12 and ended on May 22. Following the completing of the intervention, the post service learning reflection and Likert scale was administered. Following the post-reflection, the data from the instruments were reviewed and analyzed.

Data Analysis

The data collected from the Likert scale, pre intervention writing prompt and post service learning reflection were reviewed. The data from the Likert scale consisted of a numerical score established by the individual student's perception of being an active, positive contributor to the community. An average score was determined from the eight individual scores. The Likert scale was administered before and after the intervention to compare the students’ averages scores.

The data from the pre-intervention writing prompt and post service learning reflection were reviewed and categories were established based upon the data. The categories that were established allowed the researcher to compare the students’ responses from the pre-intervention writing prompt with the post service learning reflection.

Summary

The purpose of this project was to determine if students perception of his/her role in the community changed as a result of participating in service learning project in a Agriscience II instructional classes in an agricultural education program in a rural comprehensive high school. The research questions that guide this project were: 1. How did the professional literature define service learning? 2. How was service learning as a pedagogy implemented in public school classrooms, according to the professional literature reviewed? 3. According to the professional literature reviewed, what were the benefits of implementing service learning as pedagogy in
public school classrooms? 4. What were the benefits of implementing service learning pedagogy in Agriscience II instructional classes in an agricultural education program in a rural comprehensive high school? After a thorough analysis of the data gathered, the researcher was able to determine what the results were of the project.
Chapter IV: Results

The purpose of this project was to determine if students' perception of their role in the community changed as a result of participating in a service learning project in a Agriscience II instructional class in an agricultural education program in a rural comprehensive high school.

The research questions were:

1. How did the professional literature define service learning?
2. How was service learning as a pedagogy implemented in public school classrooms, according to the professional literature reviewed?
3. According to the professional literature reviewed, what were the benefits of implementing service learning as pedagogy in public school classrooms?
4. What were the benefits of implementing service learning pedagogy in Agriscience II instructional classes in an agricultural education program in a rural comprehensive high school?

The data collection methods and procedures were developed to determine if student's perception of their role in the community changed as a result of participating in a service learning project. A Likert scale consisting of statement was designed to provide a general assessment of students’ perception about being an active, positive contributor of the community. A mean score was determined from the eight individual scores before and after the intervention to compare the students’ mean scores. The pre-intervention writing prompt and post service learning reflection were administered to identify how student's viewed their role in the community. Students’ responses were categorized to allow the researcher to compare the students' responses from the pre-intervention writing prompt with the post service learning reflection.
The researcher used three instruments to collect data during this project. They were: 1) a Likert scale consisting of one prompt, 2) the pre intervention writing prompt, 3) the post service learning reflection.

Likert Scale

The Likert scale was administrated both pre and post intervention. A mean score was calculated for the group of participants. The pre intervention mean score was 2.5625. The post intervention mean score was 3.375.

![Likert Scale Mean Scores Pre and Post Intervention](image)

**Figure 1.** Comparison of Likert scale mean for the group of participants pre and post intervention

The data confirmed that students' perception of being an active, positive contributor of the community increased 76% from pre to post intervention.

Pre Intervention Writing Prompt

The pre intervention writing prompt was administered to collect data on students’ perception of being an active, positive contributor of the community. The students’ responses
were divided into positive and negative categories. The responses in each category were further analyzed and divided into sub categories.

Positive responses were divided into four sub categories. The first sub category that was determined based on the students’ responses was being a positive role model. One response was identified in this sub category. The participant remarked:

- I have the responsibility of being a positive role model to younger kids.

The next sub category that was identified was being part of a family. One response was recorded in this sub category. The student remarked:

- My role in my community is being an older brother and being honest to my family.

The third sub category that was established was participating in environmental programs. One response was recorded. The student remarked:

- I do recycle and hopefully that will help out somehow.

The final sub category was helping established organizations. Two student responses were identified in this sub category. The participants’ remarks were:

- I have been a helping hand that people smile at. I have tried pretty hard to strengthen our community through Boy Scouts, FFA and just my attitude.
- I feel that my role in the community is to help with the production of agriculture to have a better, more developed community.

Negative responses collected from the pre intervention writing prompt were divided into three sub categories. The first sub category that was determined was I am powerless to help because adults have the power. Two student responses were identified in this sub category. The participants’ remarks were:

- It takes a very highly active person to be influential in the community.
Community officials have set the rules, my opinion doesn’t really matter.

The next sub category that was determined was *knowing the importance of playing an active role in the community but chose not to*. Seven student responses were recorded. Some of the participants’ remarks were:

- I am more focused on my home life and future rather than the community.
- I do understand that helping out the community is very beneficial but I’m not in to all of that.
- My role in my community had never crossed my mind.
- This stage of my life, it is not high on my to do list.
- Understand the need to help, but only when I am in the mood.

The third sub category was *I can’t because I’m too young to make a difference*. Six student responses were determined in this sub category. Students’ responses included the following:

- I want our community healthy and well educated, but I am only one person and I can’t change the world.
- Since I am a child, it is out of my reach to make a major impact on my community.
- As a student my role is not as important as grown adults.
- Too young to make a difference.
The data collected from the pre intervention writing prompt indicated that the majority of the participants had a negative perception of their role in the community.
Post Service Learning Reflection

The post service learning reflection was administered to collect data on students’ perception of being an active, positive contributor of the community after the intervention. The students’ responses were divided into positive and negative categories. Then the responses in each category were further analyzed and divided into sub categories.

Positive responses were divided into four sub categories. The first sub category that was determined based on the students’ responses was the need for community. One response was recorded in this area. The participant remarked:

- There is a need for community, without it we have nothing.

The second sub category that was identified was the feeling of making a contribution. Seven student responses were established in this sub category. Some of the participants’ responses were as follows:

- Change your attitude, think twice before you say no.
- Seeing the bank lady’s face shining just from kids planting flowers made me realize you can make a difference.
- Don’t have to do something big to effect the community.
- Helping in the community doesn’t have to take much time and it is very beneficial.
- Don’t have to do a lot to see someone smile and would probably like to see someone doing the same things you did.

The next sub category that was determined was long term benefits community involvement. Three student responses were identified. One student remarked:

- Helping the community today means a better community tomorrow.
community. Four participant responses were determined in this sub category. Some of the students’ remarks were as follows:

- Age does not matter in making a difference.
- All people are important in some way in the community.
- I learned that I do matter in what or how much I do in the community impacts someone in someway.
- Young people can make a difference.

When the data was analyzed post intervention, it was established that all participants responded in a positive manner.

![Post Intervention Positive Responses](image)

**Figure 4.** Students’ positive responses from the post service learning reflection

The data collected from the post service learning reflection indicated that the students had developed a positive perception of their role as being a positive, active contributor in the community because 100% of their responses were positive.
Summary

The purpose of this project was to determine if students' perception of his/her role in the community changed as a result of participating in a service learning project in a Agriscience II instructional class in an agricultural education program in a rural comprehensive high school. The research questions were: 1) How did the professional literature define service learning? 2) How was service learning as a pedagogy implemented in public school classrooms, according to the professional literature reviewed? 3) According to the professional literature reviewed, what were the benefits of implementing service learning as pedagogy in public school classrooms? 4) What were the benefits of implementing service learning pedagogy in Agriscience II instructional classes in an agricultural education program in a rural comprehensive high school?

The data confirmed that student’s perception of being an active, positive contributing member of the community changed due to the intervention. The Likert Scale confirmed a 76% increase in the mean score from the pre to post intervention. When the pre intervention writing prompt responses were compared to the post service learning reflection, the data confirmed students’ perception changed. The pre intervention writing prompt indicated five positive responses and 15 negative responses. The post service learning reflection identified 15 positive response and zero negative responses. As seen from the results, student’s perception of his/her role in the community changed as a result of participating in a service learning project.
Chapter V: Discussion

The purpose of this project was to determine if students' perception of his/her role in the community changed as a result of participating in a service learning project in an Agriscience II instructional class in an agricultural education program in a rural comprehensive high school. The research questions were:

1. How did the professional literature define service learning?
2. How was service learning as a pedagogy implemented in public school classrooms, according to the professional literature reviewed?
3. According to the professional literature reviewed, what were the benefits of implementing service learning as pedagogy in public school classrooms?
4. What were the benefits of implementing service learning pedagogy in Agriscience II instructional classes in an agricultural education program in a rural comprehensive high school?

Meaning of Findings

The research instruments used to gather the data for the project were a Likert scale with one statement, the pre intervention writing prompt, and the post service learning reflection. It was determined that students’ perception of his/her role in the community changed as a result of participating in a service learning project.

The review of the literature indicated that there were five key benefits of implementing high quality service learning in public school classrooms. Strengthening of personal qualities and skills necessary for social justice was one benefit that the researcher hoped to instill in her students. The research indicated that well-designed service learning programs strengthen the personal qualities and interpersonal skills of students which were necessary for effective
citizenship. The research pointed out that service learning provided the opportunity for students' assumptions about particular social problems and community issues to be challenged through reflection and experience. The results of this study indicated that through reflection and experience, 100% of the students' changed their perception of their role in the community.

The researcher noted that the students' perception of his/her role in the community had changed based in the increase in the number of positive responses in comparison to negative responses from the pre to post intervention data. The pre intervention writing prompt data indicated that the majority of the students’ responses where negative. Two common categories of negative responses were students felt powerless to help because adults have the power and they were to young make a difference. In the opinion of the researcher, this was due in part to the fact that the students were not accustomed to reflecting on their role in the community.

Students indicated in the pre intervention writing prompt that they felt powerless and not as important as adults as well as being too young to make a difference. One participant indicated that because she was a child, it was out of her reach to make a major impact on her community. In the opinion of the researcher, these results were unexpected due to the fact that students in the Agriscience II class were accustomed to working with adults and the community on a regular basis. The researcher assumed that the students had a good understanding of what their role was in the community. However, the students were never given the opportunity to focus and reflect on their role in the community in their pervious experiences. The researcher felt that students’ perception of their role in the community changed due to the fact that opportunity was provided in the service learning project for students to focus and discuss their role in the community.

The researcher felt that the community roundtable discussion allowed students to inquire and discuss their role in the community, with three community members, and continual
reflection throughout the service learning project seemed to assist the students with focusing on their role in the community. In the researchers experience, it was noticed, that students’ questions and discussion through the roundtable discussion aided in students’ developing a better understanding of their role in the community. It seemed to the researcher that the students respected the adults that participated in the activity. The researcher also felt that continual reflection of the students through the intervention also contributed to the change in students’ perception of their role in the community.

The post service learning reflection indicated that students’ perception of his/her role in the community changed due to the fact that 100% of the student responses were positive. A majority of the positive responses by students were identified in the sub category of feeling of making a contribution. Both the review of literature and the results of this study suggested that service learning projects benefit students by providing the students with the opportunity to change their perception of their role in the community.

**Summary**

The purpose of this project was to determine if students perception of his/her role in the community changed as a result of participating in service learning project in a Agriscience II instructional class in an agricultural education program in a rural comprehensive high school. The research questions were: 1) How did the professional literature define service learning? 2) How was service learning as a pedagogy implemented in public school classrooms, according to the professional literature reviewed? 3) According to the professional literature reviewed, what were the benefits of implementing service learning as pedagogy in public school classrooms? 4) What were the benefits of implementing service learning pedagogy in Agriscience II instructional classes in an agricultural education program in a rural comprehensive high school?
Through this study, the researcher sought to determine if students’ perception of his/her role in the community changed as a result of participating in a service learning project. The project included eight students that were enrolled in an Agriscience II classroom in a rural town located in a Midwest state. The study was implemented over a two week period in mid May during the 2008-2009 school year. The activities were conducted with students’ everyday for a length of approximately 40 minutes each day. The three instruments were administered to the entire Agriscience II class. The Likert scale consisting of one prompt was administered prior to the intervention as well as after the intervention to assess students’ perception about being an active, positive contributor of the community. The pre intervention writing prompt was used to have students identify and discuss their perception of their role in the community. The post service learning reflection was administered upon completion of the intervention. The reflection focused on identifying how the student’s view of their role in the community changed as a result of the service learning project.

The data confirmed that student’s perception of their role in the community changed, perhaps as a result of the intervention. The Likert scale confirmed a 76% increase in the mean score from the pre to post intervention. When the pre intervention writing prompt responses were compared to the post service learning reflection, the data confirmed students’ perception changed. The pre intervention writing prompt indicated five positive responses and 15 negative responses. The post service learning reflection identified 15 positive responses and zero negative responses. As seen from the results, students’ perception of his/her role in the community changed as a result of participating in a service learning project.
Recommendations

To improve the quality of research, the study should incorporate a service learning project larger in scope as well as develop instruments to measure the level of academic achievement of students participating in a service learning project. The service learning project in this study did not allow students to actively engage in a large variety of community issues and social problems. It was also noticed that students seemed to be more actively engaged in the plant science activities within the classroom that were applied in the service learning project. In this particular study, academic achievement was not measured.

The researcher would like to see service learning projects used as a pedagogy in agricultural education programs nationwide. According to the professional literature, John Dewey’s philosophical approach of education and experience was identified by researchers in agricultural education as well as service learning. The experiential focus of secondary agricultural education has been a longstanding creed for agricultural educators (Roberts, 2006). Service learning aligns with the fundamental roots of agricultural education.

Conclusion

This project demonstrated the importance of implementing a service learning project in order to change students’ perception of their role in the community. The results of the data in this study indicated that students’ perception of his/her role in the community changed as a result of participating in a service learning project.
References


## Life-Staining Processes of Plants

<table>
<thead>
<tr>
<th>Photosynthesis</th>
<th>Transpiration</th>
<th>Respiration</th>
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_APPENDIX A_
<table>
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<tr>
<th>1. Food is produced</th>
<th>2. Energy is stored</th>
<th>3. It occurs in cells that contain chloroplasts</th>
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<tr>
<td>4. Oxygen is released</td>
<td>5. Water is used</td>
<td>6. Carbon dioxide is used.</td>
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<tr>
<td>7. It occurs in sunlight</td>
<td>8. Food is used for plant energy</td>
<td>9. Energy is released</td>
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<tr>
<td>10. It occurs in all cells</td>
<td>11. Oxygen is used</td>
<td>12. Water is produced</td>
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<tr>
<td>13. Carbon dioxide is produced</td>
<td>14. It occurs in dark as well as light</td>
<td>15. Gives up water vapor to the atmosphere</td>
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<td>16. Takes place primarily through the stoma</td>
<td>17. 90% of the water that enters through the roots</td>
<td>18. Greatly influenced by the humidity, temperature, wind, and other air movement</td>
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## Plant Growth Factors

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<td>Macronutrients</td>
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Macronutrients

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Appendix D
Ions, Soil Acidity and Alkalinity Guided Notes

Ions

Soil Acidity and Alkalinity

Ions

• of plant obtained from the are absorbed in

• Most nutrients are absorbed as

• Ion –
  – Anions –
  – Cations –

Ion Competition

- Nitrate
- Potassium Nitrate
- Calcium Nitrate

• ___________ of __________ important and needs to be carefully monitored for

• ___________ charges

• Ions with ___________ charges ___________ for ___________ and interrelation in the

• Some ions tend to be ___________ than others and might be able to

• For example:
  - Soil test could show ___________ but plants show signs of blossom end rot.
  - ???
  - Plants have ___________ because there is not sufficient quantities

Soil Acidity

• pH range =

• Some ___________ become to ___________ and occur in

  concentrations great ___________.

Soil Alkalinity

• pH range =

• May cause nutrients to ___________ out and not be available to plants.

Correct pH

• Increase pH =
  – Most common

• Decrease pH =

• Optimal pH range for most plants: ______________________________


Appendix E
Fertilizer: What you need to know!

Laboratory Activity

Objective:

To describe nutrient application methods and appropriate practices as well as apply nutrients to plants for economic growth.

Background Information:

Complete Fertilizers:

- Contain Nitrogen, Phosphorous, and Potassium (N-P-K)
- Popular grades:
  - 5-10-5
  - 5-10-10
  - 10-10-10
  - 6-10-4
  - 0-15-30
  - 0-20-20
  - 8-16-8
  - 8-24-8

  Determine actually pounds of nutrient in complete fertilizer:

  - Example: (Fertilizer Lab – 17-23-6)
    - Go through math as class:
      
      \[
      \begin{align*}
      \text{.17 x 4 pounds} & = 0.68 \text{ pounds of Nitrogen} \\
      \text{.23 x 4 pounds} & = 0.92 \text{ pounds of Phosphorus} \\
      \text{.06 x 4 pounds} & = 0.24 \text{ pounds of Potassium}
      \end{align*}
      \]

      Total active ingredients = 1.84 pounds
      Total Filler = 2.16 pounds

Amount of Fertilizer to Apply Determined By:

1. Specific plant to be grown
2. Potential yield or performance of the plant
3. Fertility of the soil
4. Physical properties of the soil
5. Previous plants
6. Type and amount of manure applied

Organic Fertilizers:

- Include animal manures and compost made with plant or animal products
  - Examples: manure, sludge, bone meal, blood meal, etc.
- Primary nutrient available is Nitrogen
- Nutrients made available to plants as the material decays in the soil, nitrogen is slow acting and long lasting
- Concern with organic fertilizers is it is not a balanced source of nutrients.

Inorganic Fertilizers:

- Includes various mineral salts that provide plant nutrient combinations with other elements.
- Inorganic fertilizers contain soluble nutrients that make be caustic to growing plants if not used properly.
Appendix E (cont.)
Fertilizer: What you need to know!

- Provides increased levels of nutrients.
- Most common forms of N-P-K
  - Nitrogen
    - Nitrate of soda – Highly soluble and quickly available
    - Ammonium Nitrate – not as soluble and is available over a longer period of time.
    - Ammonium Sulfate – available more slowly and leaves the soil more acidic
    - Urea Formaldehyde – organic form of Nitrogen – more slowly available than the inorganic forms.
  - Phosphorus
    - Superphosphate
    - Treble superphosphate
    - Rock phosphate
    - Ammonium phosphate
      - Held tightly by soil particles – not easily leached from soil, may not be in the water solution form
  - Potassium
    - Muriate of potash
    - Sulfate of potash
    - Nitrate of potash

Fertilizer Application Methods:
1. Broadcasting – spread evenly over the entire surface
2. Band application – about 2 inches to one side and slightly below the seed.
3. Side dressing – placing fertilizer in bands about 8 inches from the row of growing plants
4. Top Dress – broadcast lightly over close growing plants.
5. Starter Application – diluted mixtures of fertilizers used when plants are transplanted. Small amounts of nutrients that will not burn the tender roots of young plants.
6. Foliar sprays – directly on the leaves of plants
7. Knife application – mainly used with gas fertilizers
Procedures:

1. Complete the following fertilizer problem. (Make sure you show all work in any problems with calculations)

   a. Determine the actual amount of Nitrogen, Phosphorus, and Potassium as well as the total filler amounts in the Fantastic Fertilizer. Use the label below to aid in calculations:

   Pounds of Nitrogen: ____________
   Pounds of Phosphorous: ____________
   Pounds of Potassium: ____________
   Pounds of Filler: ____________

2. Complete the following case studies. You will need to reference the four fertilizer labels attached to this packet.

   a. The Millers’ have just finished construction of a new home in Fulton County. They have begun to think about seeding their yard as well as designing an implementing landscape around their house. They have a good understanding when the contractors leveled out the soil from around the house that your topsoil has been mixed with quite a bit of subsoil.

      I. What is the best fertilizer for this scenario? Why?

      II. What are the active ingredients?

          1. Nitrogen;

          2. Phosphorus: ____________________________
          3. Potassium: ____________________________

      III. What is the proper application of the product you chose?

      IV. Explain the rate that this particular fertilizer should be applied?

          (if a water soluble fertilizer, explain ratio of fertilizer to water)
b. Sarah has volunteered to complete a service project with her local FFA chapter, which requires her to assist in beautifying the downtown area of her local village. She will be assisting in transplanting about 300 perennials in flower beds and pots. The areas that will be planted have contained perennials in the years past and have a high level of organic material present.

I. What is the best fertilizer for this scenario? Why?

II. What are the active ingredients?
   1. Nitrogen; 
   2. Phosphorus: __________________________
   3. Potassium: __________________________

III. What is the proper application of the product you chose?

IV. Explain the rate that this particular fertilizer should be applied? (if a water soluble fertilizer, explain ratio of fertilizer to water)

c. The Cooper’s live on a sustainable farm that is focusing on raising organic products that will be marketed in a niche market in Trinity Valley. Trinity Valley is a small village in the heart of North Carolina that has several farm markets that sell organic grown products. The Cooper’s sell most of the products at this market. It is spring time, and the Cooper’s are ready to prepare the land for spring planting.

I. What is the best fertilizer for this scenario? Why?

II. What are the active ingredients?
   1. Nitrogen; 
   2. Phosphorus: __________________________
   3. Potassium: __________________________

III. What is the proper application of the product you chose?

IV. Explain the rate that this particular fertilizer should be applied? (if a water soluble fertilizer, explain ratio of fertilizer to water)
Appendix E (cont.)
Fertilizer: What you need to know!

3. Complete the following activity.
   a. You have just been given a decorative pot by your parents to plant to
give to your next door neighbor as a token of your family’s
appreciation for being a good neighbor. Your parents say just make it
look pretty and make sure it will last through the summer. It is your
job to purchase the flowers, potting soil, and fertilizer then plant and
deliver it to your neighbor.

   I. First, you must visit the greenhouse to purchase your flowers.
Remember that your arrangement will probably be in full sun
and attractiveness it important. You only have $20 to spend.
Below greenhouse prices:
   1. All of the following flowers are $0.30 each
      a. Aster, Lobelia, Zinnia, Verbena, Dianthus,
         Dusty Miller, Impatiens
   2. All of the single pot flowers are $2.50 each
   3. Potting soil – $3.79 per bag
   4. Plant pots - $5.00
   5. Fertilizer (will have to mix what you need)
      a. Liquid - $1.50
      b. Granular – $3.00
   6. ATTACHED IS A GREEN HOUSE RECEIPT SLIP
      THAT MUST BE COMPLETED!

   II. Once your purchases are completed, it is now time to plant
your pot, follow the steps below:
   1. Fill pot almost with about 6 inches of soil from field
      than the rest with potting soil.
   2. Arrange plants, then add the rest of the soil, do not
      plant flowers to deep, the base of their stem should be
      level with the soil.
   3. With you fingers compress the soil are the stem
   4. Fertilize
   5. Water

- Final thoughts: Make sure have all four procedures completed along with the
  greenhouse receipt. Turn packet of materials and flower pot in by the end of the
  period.
Fertilizer: What you need to know!

Mrs. Amstutz’s Greenhouse  
840 Parkview Ave.  
Wauseon, Ohio 43567

Customer Information:  
Name: ____________________________  
Address: ___________________________  
Phone No. ___________________________  
Date: _____________________________

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<th>Description</th>
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Total  
Tax (Ohio tax @ 5.75%)  
Grand Total
Appendix F
Community Panel Reflection

Name: ________________________________

Post Round Table Discussion Reflection

Directions: Answer the following question in at least three well developed paragraphs.

Based on today’s discussion about service in the community, what did you learn about your role in the community?
Appendix G
Post Service Learning Reflection

Name:  

Post Service Reflection

Directions: Answer the following question in at least two well developed paragraphs.

Did your view of your role in the community change as a result of the service learning project? Explain how your view changed specifically.

Circle below the numerical score that best describes your view on your role as a contributing member of our community.

1 2 3 4 5
Low  Medium  High

Don't really care about being an active, positive contributing member of the community

Understand and care about being an active, positive contributing member of the community