

An Evaluation of Past Performance of the Two-Year Agricultural Technology Program at
Virginia Tech as Perceived by the Program Graduates

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An Evaluation of Past Performance of the Two-Year Agricultural Technology Program at Virginia Tech as Perceived by the Program Graduates

Kantrovich, Adam Joseph ABSTRACT

The review of the literature reveals the historical nature of Vocational Education programs and how they relate to the importance of Virginia Tech's two-year post-secondary Agricultural Technology Program. The literature review also provides a historical review of information regarding Virginia Tech's Agricultural Technology program, brief histories of other post-secondary land-grant two-year agricultural programs, vocational education philosophers, and two-year program evaluations.

The purpose of this study was to perform an evaluation of past performance of the two-year Agricultural Technology Program at Virginia Tech as perceived by the two-year program graduates. The study focused on two points, a) the graduate's opinions with regards toward the improvement of the program on behalf of the students, and b) the strength and weaknesses of the program in order to determine what the program has accomplished and where it should be headed.

Five research questions guided this study;

1. How pleased were the graduates with the education they received through the Agricultural Technology Program?
2. What is the salary range of the graduate's first job after graduation and what is their present salary range?
3. What were the strengths and weaknesses of the program as perceived from the graduates?
4. What are the Agricultural Technology graduates current occupations?

5. What recommendations do the graduates have for the improvement of the Agricultural Technology Program?

A survey instrument was used as the research method for the collection of the data. A pilot study was performed to test the survey instrument. Three rounds of survey instruments were sent to increase the possible response rate. A non-respondents study was performed to determine if there was a difference between the respondents and non-respondents of the survey instrument. Frequencies, mean, median, mode, and standard deviation were used in the analysis of the data.

The population consists of all of those that graduated from the two-year Agricultural Technology Program at Virginia Polytechnic Institute and State University from the date of the programs first graduation class (1989) to the fall semester of 1998. Because there was such a small number of subjects within the population, to prevent sampling error, and to be able to prevent any deviation of assumptions between the sample and the population the whole population was mailed an evaluation instrument. All three of the mailings yielded a total 215 received survey instruments for a 62% response rate from an N of 343. This left a total of 128 or 37% non-respondents. A reliability test was run in SPSS using the Cronbach Alpha method, also know as Alpha coefficient, the Standard Item Alpha = .7661.

The major conclusions of the study were that the Agricultural Technology Program graduates were pleased with the overall education that was received at Virginia Tech, the mean salary for the graduates first job was between \$18,000 and \$23,999, the mean of the graduates current job is between \$24,000 and \$29,999, the major strengths to the program were the mandatory internship requirement, the hands-on courses, and the advisors for the program, the weaknesses of the program are issues with the transferability of credit hours to the four-year program, additional computer and technology courses and information are needed, and a lack of

available elective course offerings. Just over 78% of the program graduates are employed within the field of agriculture and 16% have gone back to farm ownership or to work on the family farm. Some of the major recommendations that were made by the program graduates were to offer additional courses and options, add more emphasis to computers and technology, additional job placement services, and to allow students to take more four-year courses.

Based on the findings recommendations were made about further studies for the addition of courses, faculty, program options, more emphasis of technology in courses, curriculum development, job placement, and credit hour transferability. Specific recommendations were made for an external review to be performed of the Agricultural Technology Program, a formal review of curriculum, additional courses in computers and technology, and further research to be performed with regards to policy change in transferability of credit hours to the four-year program, addition of courses offered as electives, and for students to take courses provided by the four-year program.

Dedication

The work contained herein is dedicated to those that have meant the most to me throughout my life.

In the memory of my grandparents, Yetta Platt, Ada and Alex "Zook" Kantrovich to which I have learned about gentle kindness, honesty, perseverance, and how to look to the past for answers that effect the future.

To my parents, Fay and Jerry Kantrovich who always told me that I could accomplish anything that I set my mind to and whom also taught me discipline, respect for others, and to finish what you started.

And to Jennifer, my best friend, and my wife, who has put up with me, pushed me, made me laugh, and most of all, has been here for me when I have needed her most.

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Chapter 1

INTRODUCTION

Virginia Polytechnic Institute and State University (Virginia Tech) has four-year agricultural programs and a two-year Agricultural Technology Program. The two-year Agricultural Technology program has been a source of controversy since its inception. The Agricultural Technology Program's establishment got its start in the mid-1970s with a push from the Virginia Farm Bureau Federation and the Virginia agricultural industry for two apparent reasons. First, there was a need for students to be formally trained in agricultural production that would lead to careers as technicians and middle management positions directly related to agricultural production in the Commonwealth of Virginia. Only 7% of the students that graduated from the College of Agriculture and Life Sciences four-year program were returning to the farm and careers directly related to agricultural production. At the time graduating high school students that wanted formal training in agricultural production would leave the state to receive a two-year degree that would meet the demands of the Virginia agricultural industry (Dr. John White, personal communication March 23, 2000).

The idea of Virginia Tech establishing a two-year agricultural program came from outside sources of the University and continued from the top down within the University. The College of Agriculture and Life Science (CALS) faculty seemed to be against the establishment of the program because they felt as if the administrators of the College of Agriculture and Life Science and Virginia Tech were pushing the program upon them. The CALS faculty was also concerned about gaining more responsibilities for the two-year program without the appropriate added funding and compensation to adequately continue what the faculty already was responsible for (Dr. John White, personal communication March 23, 2000).

The following introduction will show what kind of two-year agriculture programs exist and where they are housed administratively and how changes to the program are necessary for its continued successful existence.

Community College, Non-Land-Grant Institutions, and 1862 Land-Grant Institutions

Throughout the United States there are many two-year post secondary agriculture programs. Most of these programs are located within the community college system. Only a few are placed within four-year post secondary institutions. This number decreases even further when we look at the number of two-year post-secondary agriculture programs at land-grant institutions (Appendix A).

According to the latest statistics from the American Association of Community Colleges (AACC), there are 1,132 community colleges in the United States (<http://www.aacc.nche.edu/allaboutcc/number.htm>, Feb 2000). Using the National Center for Education Statistics web site (<http://nces.ed.gov/ipeds/cool/Search.asp>, Feb. 11, 2000) and using the Integrated Postsecondary Education Data System (IPEDS) a search was performed to ascertain the total number of public community colleges containing agriculture programs. The search criteria was set by looking for public community colleges that had the following programs; agricultural business and production, agricultural sciences, and conservation and renewable natural resources. The results of the search indicated that there are 460 public community colleges containing programs that met the searched criteria.

The Food and Agricultural Education Information System (FAEIS) data that had been gathered in the fall of 1998 regarding enrollment status stated that there are "64 colleges with programs in Agriculture, Renewable Resources and/or Forestry." (FAEIS, 1999, p. 85). In the

FAEIS non land-grant summary there was a response rate of 70.3%, 45 of the 64 colleges had responded to the study. From the 45 respondents only 7 non land-grant institutions have enrollment in two-year programs with a total number of 197 students. The overwhelming majority of these programs and students enrolled can be found in the Southern Region with four programs totaling 139 of the 197 students enrolled.

FAEIS data also showed that there are 57 1862 land-grant Institutions in the United States and its Provinces (i.e. Samoa, Micronesia). From data that had been gathered in the fall of 1998 regarding enrollment status only 53 of the 57 institutions responded showing a total of 15 1862 land-grant institutions having an enrollment in two-year programs. This number included one program at the American Samoa Community College. The total number of students enrolled in the fall of 1998, according to the data is 3,209. There is a large gap in student enrollment between the program with the highest number of students and the lowest number of students enrolled. Ohio State (Wooster) had the largest student body with 965 students and the University of Maine-Orono has the least amount of students with only one student enrolled in the fall of 1998. The institutions that had not responded were; The University of the District of Columbia, University of Maryland, University of Puerto Rico, and the University of Micronesia. The University of Maryland, which did not respond to the study, does have a two-year agriculture program with an enrollment of 87 students, and the University of Nebraska misreported their information and has a total of 270 students according to the Technical Agriculture Association (TAA). The University of Maryland's program brings the total number of land-grant institutions with enrollments in two year agriculture programs to 17 (<http://www.ag.ohio-state.edu/~taa/membership.htm>, Feb 11, 2000). FAEIS only showed one 1892 land-grant institution having a two-year Veterinary Science program with 10 students enrolled.

With so many postsecondary two-year agricultural programs available why would one want to choose a program at a land-grant institution? There are many factors that should aid in one's decision: cost of the education, housing, variety of options and courses, experience and personalities of the educators, etc . . . Due to a lack of published information, and from personal interviews conducted with Drs. David Ford, John Crunkilton, Gary Minish, and John White on this subject, there are many more positives that come from receiving an education from a land-grant institution compared to a community college. A land-grant institution will have a greater number of experienced instructors and professors from which to teach courses. Students will be at an institution in which research can immediately get into the course curriculum to provide the most up-to-date information on a topic. Usually more up-to-date facilities, equipment, and machinery can be integrated into the course curriculums.

There are a few negatives to attending a land-grant institution versus a community college; a) a student may have to pay the additional cost of housing if the institution is not within the local area, b) the additional cost in tuition and fees, and c) for a mid-career person with a family it could mean a temporary separation from the family or a relocation of the whole family. Either way two-year land-grant agricultural programs provide an important service to the institution's locality, region, and state.

Individual Program Histories and Changes to Conform

As discussed in the previous pages there are many two-year agricultural programs throughout the nation, each with its own unique history, some with a lengthy history behind the program. Many of these programs may have come about for any number of reasons; however,

most must have felt some niche that needed to be filled in some locality, region, or state of the established program.

The oldest public junior college is Joliet Junior College in Joliet Illinois that was founded in 1901 by William Rainer Harper, a president of the University of Chicago. Joliet Junior College has a thriving agricultural program almost a 100 years after its inception (Vaughan, 1995).

The National Farm School, Doylestown, Pennsylvania

Some programs have thrived for many decades, and some for as long as a century, show endurance to their curriculum and consistent assessments being performed for the survival of the program. An example of a private program changing in order to continue its existence is the National Farm School, now known as Delaware Valley College in Doylestown, Pennsylvania. The National Farm School was the brainchild of Rabbi Joseph Krauskopf who purchased the farm on January 10, 1896. Rabbi Krauskopf had gotten the idea of the farm school after visiting Czarist Russia and meeting with the "great" Tolstoy. Krauskopf began the farm school to be able to aid young Jewish boys and girls in getting out of the ghettos in the city. The school opened up an economic opportunity to the new immigrant population. The original name for the school was to be "The Jewish Agricultural College" (Blood, 1973, p. 83). Due to its lack of identification with any religion the name was eventually changed to "The National Farm School." This name would also appeal to more young men other than just those of the Jewish faith and help the college flourish (Blood, 1973).

Two years after the charter of the National Farm School a statement of purpose in a prospectus was issued:

It was founded in the belief that, in a country as large and fertile as ours, the pursuit of scientific agriculture will open an honorable and useful career to many a boy who wastes his years and opportunities in following a petty trade career, or wastes away in a sweatshop treadmill, or is driven to anarchistic discontent, or to crime or dependency by non-employment or by insufficient living in the slum centers of the city. . .

While the National Farm School is to be non-sectarian, it is intended to encourage especially Jewish lads to follow the most honorable, the most useful, and the most independent of all callings-agriculture (Blood, 1973, p. 85-86).

The preceding statement of purpose showed immediately the original intention of the National Farm School and how it changed so that the school would be able to survive by becoming non-secular. Throughout the years the school began to accept state funding and continued to add a greater variety of courses and programs and has since flourished as one of the only private agricultural and science teaching colleges in the nation. As Dr. John Hillison stated in a 1991 paper at the Southern Research Conference for Agricultural Education "The leaders of the school recognized that change was crucial. Its basic mission of teaching about agriculture has never been forgotten. However, additional majors and the admission of female students has created an environment where the school has not only survived, but flourished" (J. Hillison, personal communication, February 15, 2000).

The Agricultural Technology Program at Virginia Tech

The Agricultural Technology Program at Virginia Polytechnic Institute and State University created a small firestorm before the first graduating class of 1989 even stepped foot on the Virginia Tech Campus. Correspondence between many administrators and faculty members of the University, the Virginia Farm Bureau, Virginia Community College Leaders, and the State Legislature showed heated debates and strong feelings on whether or not the program should be created. Many discussions ensued regarding the necessity of the program and if it were proper for the program to be placed at Virginia Polytechnic Institute and State University. Over a decade would pass with discussions, debates, arguments, and threats before the two-year Agricultural Technology Program would become a reality with students walking through the hallowed halls of Virginia Tech. It would be two-years later, in 1989, that the program graduated its first students from the present day two-year agricultural program. Just over 10 years and three administrators later many of the same debates continue to rise about the programs overall validity to the region and state, and whether or not a two-year program is appropriate at a land-grant institution.

The Agricultural Technology Program at Virginia Polytechnic Institute and State University has reached a milestone in its history. In May of 1999 the Program graduated its 10th annual class. During the past 10 years the program has progressed through changes in administration, changes within the core curriculum, changes in options offered, transfer of course work, and for the added benefit to allow students to more appropriately choose electives. The changes that have taken place aid the Program in the overall goal to prepare an individual to head straight into the agricultural workforce after completing the Program.

Besides the internal program improvements that have taken place to the Agricultural Technology Program there are a number of external changes that have affected the program. Among these changes are the clientele entering the program. More and more of the clientele are now coming from urban areas and have very little if any farm experience. Changes within the federal and local governments, and general social aspects are also beginning to play a role with what changes can occur in a two-year agricultural program.

The changes to the individual student are a qualitative measurement found by the trend toward what option or specialization the student takes within the Agricultural Technology Program. The mass has moved from traditional production agriculture program, such as crops and livestock management toward landscape & turf management and agricultural business. This may be due to the individual student, governmental, social and or a combination of changes. One possible explanation for the move from traditional production agriculture to landscape and turf management and agricultural business can be due to a combination of the previously mentioned aspects. For example, in the past the Southern Region of Virginia, agriculture has had a heavy base in tobacco. American values have changed regarding tobacco issues pushing the federal government to institute new laws and regulations regarding the tobacco industry. This has had a trickle down affect making it difficult for a small producer to survive on raising tobacco.

Data gathered from the Virginia Agricultural Statistics Service (VASS) show that cash receipts, government payments, and gross and net farm income has continued to rise since 1970 with only a slight falter between 1990 and 1995. The National Agricultural Statistics Service (NASS) released an announcement on February 19, 1999 which stated that hired workers were up 5% and wage rates were up 4% from the previous year showing an increase in agriculture. This may qualitatively show a swing between the production of an agricultural commodity to

another. The largest increase, according to the NASS took place in the Appalachia I region, Virginia and North Carolina.

Statement of Purpose

The purpose of this study was to perform an evaluation of performance of the Virginia Tech Agricultural Technology Program as perceived by the two-year program graduates. The study focused on two points, a) the graduate's opinions with regards toward the improvement of the program on behalf of the students, and b) the strength and weaknesses of the program in order to determine what the program has accomplished and where it should be headed.

Research Questions

In order to accomplish the purpose of the study the following research questions were asked.

1. How pleased were the graduates with the education they received through the Agricultural Technology Program?
2. What is the salary range of the graduate's first job after graduation and what is their present salary range.
3. What were the strengths and weaknesses of the program as perceived from the graduates?
4. What are the Agricultural Technology graduates current occupations?
5. What recommendations do the graduates have for the improvement of the Agricultural Technology Program?

Assumptions of the Study

1. The responses to the questionnaire were assumed to reflect the true attitudes of the respondents based upon their personal perceptions, observations, or experiences.
2. The responses to the questionnaire were assumed to be truthful answers.
3. The program was important enough in their individual lives that they would remember potentially useful information.

Limitations of the Study

1. The responses to the questionnaire were assumed to reflect the true attitudes of the respondents based upon their personal perceptions, observations, or experiences.
2. Guarded questions that people did not want to respond.
3. Even though a thorough review of literature and discussions of program administrators has taken place, it is still possible that key questions may have been missed.
4. Because of the history of the program and its political context, limited information was made available for evaluation.

Organization of the Study

This follow-up evaluation of performance of the two-year Agricultural Technology Program at Virginia Tech as perceived by the program graduates is divided into five chapters.

Chapter 1 contains the introduction, purpose of the study, research questions, and limitation of the study.

Chapter 2 contains the review of the literature relevant to this study.

Chapter 3 contains the descriptions of the subjects, instrument(s) used, procedure, and the analysis of results.

Chapter 4 contains information to describe the results of the data collected, the findings of the questionnaire, and the analysis of data related to the research questions.

Chapter 5 contains the discussion, summary, conclusions, limitations, implications and recommendations of the study.

Chapter 2

REVIEW OF LITERATURE

The purpose of this chapter is to provide a review of the literature that reveals the historical nature of Vocational Education programs and how they relate to the importance of Virginia Tech's two-year post-secondary Agricultural Technology Program. This chapter will also give a historical review of information regarding Virginia Tech's Agricultural Technology program, brief histories of other post-secondary land-grant two-year agricultural programs, vocational education philosophers, and two-year program evaluations.

The theme of the following literature review is to show how education, vocational education and its philosophies have changed throughout history. The Agricultural Technology Program continues to follow some of the basic philosophies and trends that have continued in education for hundreds of years. The Agricultural Technology Program uses a philosophy of teaching skills through hands-on courses, this philosophy began in biblical times had continued through history with such philosophers as Johann Pestalozzi, Booker T. Washington, David Snedden, and Charles Prosser. The Agricultural Technology Program also mandated that all students perform an internship in the field of which they are studying, this philosophy of practicing a trade before becoming a master in the field has its roots in an apprenticeship style of education. The literature review shows how apprenticeships have played an important role in learning skills and a trade. Throughout history apprenticeships and hands-on learning have become a basis of vocational education, from there vocational education has opened the door to agricultural education (Bennett, 1926; J. Crunkilton, personal communication, February 21, 2000; Gordon, 1999; J. White, personal communication, March 23, 2000).

The Agricultural Technology Program resides at Virginia Tech as a program within the College of Agriculture and Life Science. Virginia Tech is an 1862 land-grant institution, because of this some faculty thought that this would not be a suitable institution to house a two-year agricultural program. Because of the Morrill Land-Grant Act 1862, the Hatch Act of 1887, and the Smith-Lever Act of 1914, the land-grant institution was created to offer courses in agriculture, military tactics, and mechanical arts so that individuals that were members of the working class sector would be able to attain a practical education. The land-grant institutions are also to support experiment stations and offer a component of outreach through the Cooperative Extension Service to the citizens of the state. Nowhere in any of the acts does it state that the land-grant institution is to only provide four-year programs, as the literature review will show. Therefore, making a land-grant institution an appropriate place to house two-year agricultural programs because of its great breadth of facilities, research and teaching faculty, and professional outreach personnel to aid in the education for those in such a program (Morrill Land-Grant Act, 1862; NASULGC, March 1995).

A Historical Review of Education and Vocational and Technical Education

America is a young country compared to its Asian and European counterparts and has come a long way in education in just over 200 years as an independent nation. Many aspects that influenced American education's development have come in notables from Europe and the biblical Middle East.

According to Charles Alpheus Bennett, from the beginning people have learned the basic skills necessary to survive by simple imitation. Skills needed to create weapons requires some

form of education whether it be formal or in the case of the "savage man" and "Barbaric people," imitation (Bennett, 1926; Davidson, 1901).

Further up in "civilized" times vocational skills became a part of religious daily lives. Bennett and Rabbi Telshulkin stated that those practicing the Jewish faith had social values concerning "instruction in some trade or other vocation" (Bennett, 1926). A young Jewish male would be required to go to school in the morning while learning a trade with his father in the afternoon (Bennett, 1926).

Jewish ancestry followed the teaching of a trade as mandated by the Talmud, the book of commandments the Jewish faith follows. Bennett and Rabbi Telshulkin stated that the Talmud instructs that it is a father's duty to teach your son the law and to teach him a trade. "Whoever does not teach his son a trade or profession teaches him to be a thief" (Babylonian Talmud Kiddushin 29a, Circa 400-500 C.E.; Bennett, 1926, p 13; Telshulkin, 1994, p.153).

Thus we have a beginning of an apprenticeship type of system where a skill or vocation is passed down from a master to an apprentice. The apprenticeship method can be found throughout history through the Babylonian times through the Code of Hammurabi (about 2250 B.C.), to the Greeks, and early Christian Monks (Bennett, 1926). It was a necessity for the Monks living in a monastery system to be self-sufficient. Each Monk was required to gain a skill at a mastery level and to perform his task for the overall good of the monastery (Bennett, 1926).

In the seventeenth century John Amos Comenius proposed an educational system which included the following:

1. Infant school in the home for children up to the age of six.
2. Vernacular school, a school similar to elementary school in every community for children between the ages of six and 12 would attend.

3. Secondary school, "Gymnasium" for "selected students from twelve to eighteen years of age."
4. University, for "young men who would continue their education beyond the age of eighteen." (Keatinge, 1896; Laurie, 1885)

The infant school was to use play as a means of education. During the fourth and fifth year the children were to exercise by using drawing and writing (Monroe, 1901).

Comenius had intended the Vernacular school education to include "all that is proper for a man, and is one in which all men who are born into the world should share" (Keatinge, 1896, p. 418). Keatinge (1896) went on to state that Comenius thought that the gymnasium school was where selected students would receive a "liberal education" (p. 418).

Comenius does not mention any vocational training. However, he began the idea of a separated school system that would benefit individuals according to their age (Monroe, 1901).

Johann Heinrich Pestalozzi, as a young man in Switzerland, began to study law. It was at this time that Jean Jacques Rousseau's book *Emile*, published in 1762, was creating a stir in many of the elite circles of Europe. Pestalozzi became interested in Rousseau's writings and gave up studying law and turned to agriculture. Pestalozzi agreed with Rousseau's idea that agriculture "was the best and happiest of all occupations" (Woodbridge, 1831, p.21). Both, Pestalozzi and Rousseau were followers of Comenius (Woodbridge, 1831).

After marriage, studying agriculture and the birth of his son, Pestalozzi began the Neuhof Industrial School Experiment. In 1774 he took in many children, which he clothed, fed, and took care of and began to educate them at the Neuhof Farm. The experiment was an educational success but a financial disaster. He received some funds, and in 1776 made a written plea to all that he knew for additional funding to educate the poor at the Neuhof Farm. In 1780 Pestalozzi

had to halt his efforts to the experiment due to financial difficulty. In the years following the Neuhof experiment he would continue to attempt the same educational ideals but to no avail. In approximately 1804, a friend of Pestalozzi, Emanuel von Fellenberg offered the idea of them working together, which they did until Pestalozzi dissolved the partnership and failed financially again in Hofwyl, Switzerland (Bennett, 1926).

In the end, Fellenberg created his own institution in 1807 using the ideals of Pestalozzi's educational instruction. Fellenberg's academy combined the manual arts and labor for educational purposes and exercise but the academy also taught courses in the sciences, religion, languages, mathematics, philosophy, music, drawing, literature, and gymnastics (Bennett, 1926).

Fellenberg took in an assistant by the name of Wehrli. Fellenberg allowed Wehrli to take in a few poor children. Wehrli and the children lived in a farmhouse where he began to educate them, as a result the Fellenberg Farm and Trade school was born. Wehrli used connections between school studies and the manual labor to aid in educating the students. Fellenberg and Wehrli continued to expand the school creating a school of Applied Science and a Normal School (Woodbridge, 1831).

In the end, Pestalozzi's ideas and theories lived on through the opening of a school in 1803 by a former instructor of Pestalozzi's, Francis Joseph Nicholas Neef, who opened the school in Paris based from Pestalozzi's educational theories and ideals. Neef's school caught the attention of many, including a delegation from America that included a philanthropist by the name of William Maclure. After returning to America, Maclure sent for Neef to open a similar school in Philadelphia that in 1809. Neef's school failed, as did a similar school in New Harmony, Indiana. Barlow (1976) cited one of the reasons for failure of these institutions was because these

schools were based on the European Pestalozzi theory that was never Americanized (Barlow, 1976; Gordon, 1999; Gutek, 1978).

Because of the previous mentioned educators and philosophers, the groundwork had been laid for a vocational education system. Throughout the next two centuries vocational education would have many pitfalls in Europe and in America, but it would be just a small measure of time in this young country's history before vocational education would be given the recognition it well deserved.

The world first sees a plan for a College of Agriculture in England from a gentleman by the name of Samuel Hartlib. The College of Agriculture, or as Hartlib named it a "College of Husbandry" was to use an apprentice style of education. Each student was indentured for seven years where he would be taught the "theory and practice of the art, trade, or mystery." This is the first step towards formal education in the trade of agriculture. The idea of theory and practice being taught demonstrates a new twist in education with the similar philosophy of apprenticeship and teaching the skills necessary that coexist with the theory behind them (Bennett, 1926).

Bennett stated that the admission policy followed a set of stringent rules including:

- 1) the student must be at least fifteen years or older.
- 2) The student must have ingenuity.
- 3) "must subscribe himself a seeker for advancement of the Mystery and Society,"
- 4) must live in the common hall,
- 5) must be single,
- 6) must pay 50 pounds when entering, and have 250 pounds to aid in his preparation and to pay for servant, horse, and any other said items (Bennett, 1926, p. 43).

We can see through the previous literature that from biblical times there has been a need for education and for vocational education. In biblical times the learning of a vocation has been

mandated through religion, throughout the rest of history, education and vocational education has been set upon the current events, religion, and society of the time. In some instances it has been shown that the only way to survive and to receive any type of education has been through the use of apprenticeships. Apprenticeships has been woven in to present day vocational education in some form such as the continued use of apprenticeships, cooperative work situations, or internships just to name a few.

It is important to know where various styles of education came from and how it aided the local community and society of the time. We are able to look back through education's history and find a piece of our present education system. This enables present day educators and teacher educators to more effectively teach and instruct.

Although it was never carried out, Thomas Budd introduced a plan for public schools in 1685 for the colonies of Pennsylvania and New Jersey. Within Budd's plan he stated that a "boy be taught and instructed in some mystery or trade" (Bennett, 1926, p. 63). The proposed school would be required for all children including the local Native Americans and be based from the Quaker religious traditions. This would be one of the first known schools of its kind (Bennett, 1926, p. 62-3).

Pre-Revolutionary war illiteracy was high and there was no formal education system in place to combat this problem. The education system that was present was not uniform among the colonies and became disrupted by the war (Barlow, 1976).

During the Colonial periods apprenticeship was a well-suited system that needed little adjustment. This system was a route for boys and girls who were unable to pay for any other type of education to be able to become literate. Apprenticeships were overseen by the local town or city and aided a societal problem of orphaned and poor children. According to Seybolt

apprenticeship provided for some of the basic needs: food, clothing, and shelter; religious instruction; reading and writing; skill training, and the "mysteries of the trade" (Seybolt, 1917).

With more advancement in education, the apprenticeship movement declined after the Colonial period and all but died out in the nineteenth century with the onset of factories (Barlow, 1976; Gordon 1999; Hawkins, Prosser, and Wright, 1951).

After the Revolutionary war, America saw many changes to the nation including education. Literacy became an issue "for the purpose of improving the soul, and later when secular ideas about social equality led to the doctrine that literacy was a basic right of all people." (Barlow, 1976, p. 24). America watched an educational control transition from the church to the State. Since the Constitution did not make any statements about provisions of education we see that education would be a function of the state. Over time, according to Barlow, we see that "education was considered to be a concern of the federal government, a function of the State, and a responsibility of the local community" (Barlow, 1976, p. 24; Venn, 1964).

Within a short period of time several movements arose regarding education, the Manumission Society of New York organized in 1785 and represented the City School Society movement. Its main goal was to educate those children that had no other means to a formal education. The Manumission Society's stated purpose was to "defend the rights of blacks, and especially to give them an education" (Barlow, 1976, p. 24). Another City School Society movement that gained recognition was the New York Free School Society founded by De Witt Clinton in 1805, many other public school societies ballooned within the nation to provide a free education (Barlow, 1976, p. 24).

In 1799 the Sunday school movement made an appearance as a philanthropic venture. The idea was pulled from England and used in Philadelphia. Again the education was provided to those children who were poor. The Sunday school movement did accomplish the melding of all societal classes for the equality of education.

In 1816 Boston began the Infant school to provide a plan to prepare children to enter a grammar school. The Infant school actually has its roots in Scotland and was organized by Robert Owen in 1799. Owen created the school for children at the ages of three and four years old. The children were to be morally, physically, and intellectually trained through song and dance instruction (Barlow, 1976, p. 24)

Joseph Lancaster organized a system known as the Lancasterian Movement. This movement was to educate large numbers of students to read. This was done by a school master teaching a number of students known as "monitors" to read and in turn those monitors would teach 10 other students what they had learned from the school master. The method was efficient, effective, and an economical way to instruct a large number of students the proper skills necessary to become literate (Barlow, 1976).

In the early nineteenth century, educational movements began to call for free educational opportunities. Barlow stated (1976) that private charity schools and societies of mechanics began to appear to heed to the educational callings.

In 1814, the Boston Asylum and Farm School was founded to educate orphaned boys. November 17, 1785 saw the founding of the General Society of Mechanics and Tradesman that had a full-scale educational program by 1821 (True, 1929).

Many other groups and societies came about that influenced American education such as the Lyceums, manual labor academies, and agricultural societies. Each one's basic principle was

to educate individuals for a specific purpose or trade. Funding came from the private sector and or business that had some relationship to the skill(s) or trade(s) taught (Knowles, 1962).

The nineteenth century also saw the advent of private venture schools offering education to whomever would be willing to pay, these schools took a more utilitarian approach to education offering a more expansive curriculum including business, trade, commerce, and modern languages. This set the stage for the movement of vocational skills from an apprenticeship society to the schools. This set the stage that formal education would prepare students for careers (Barlow, 1976, p. 26).

In 1749 Benjamin Franklin published *Proposals relating to the Education of Youth in Pennsylvania*. Franklin wanted to establish an academy that would offer a secular and utilitarian education. The academy would take the technical and vocational education taught by masters, under contract or through apprenticeship and formalize and institutionalize it. Franklin's academy opened in 1751 and he severed ties with it in 1775 due to the academy falling into the "hand of a conservative elite, whose cultural ties were closer to London than Philadelphia" (Barlow, 1976, p. 26).

Vocational education in America could be found early in American history in the exemplified by missionaries in New Mexico, California, Texas, and Florida by teaching young Native American boys manual labor and agriculture, and young girls essentials for the home. But the formal vocational education system in America has roots in Europe. Jean Jacques Rousseau developed ideas that students should be taught through work as opposed to books. One of the skills Rousseau had thoughts upon was agriculture, "Most respectable of all arts and professions" (Bennett, 1926, p. 96).

In 1797 Dr. John de la Howe of Abbeville, South Carolina provided an endowment for "an agricultural or farm school" (Bennett, 1926, p. 94). When Dr. Howe died he had an estate of 2,630 acres of which he willed 1,500 acres to the endowment. 500 acres were to be used for farming purposes while the remaining 1,000 acres were to stay forested for fuel, range, and timber. In 1917 about a 100 years after Dr. Howe's initial endowment, the state of South Carolina took over the management of the land, built a new building, and added funds for maintenance. The school is known as the De la Howe State School and it is probably one of the oldest agricultural schools in the nation (Bennett, 1926, p. 94-5; True, 1929).

Robert Owen, a Scottish industrialist was approached about purchasing a community that was created by a religious group waiting for the Second Coming of Christ. On June 2, 1825 Owen purchased the settlement known as New Harmony and immediately made his way to Washington D. C. While in Washington, Owen gave two speeches to the joint sessions of Congress, the President, and to the members of the Supreme Court. Owen spoke about the idealistic vision about the socialist community of New Harmony, Indiana and how other similar communities would spring up through the nation. Robert Owen was aided by William Maclure and eventually added Joseph Neef as schoolmaster. New Harmony was to be a communal style of living with a Pestalozzi style of education system. Due to differences of opinion for those running New Harmony, it failed after only two years (Wilson, 1964).

The next movement of education included the manual labor movement, which swept through the nation as schools that offered an education in usually religion, English, some form of agriculture, or other trade. The students were also mandated to perform manual labor to aid in the cost of the education. Many of the schools failed due to financial reasons. Theodore Weld of the Oneida Institute thought that one of the reasons for the failures is that instead of people making

donations they have invested monies expecting a return on investment from the labors of the students at the institution (Bennett, 1926).

Manual Training High Schools

The manual labor movement came about to aid the needs of the farmer and the mechanic. The major difference between the Manual labor movement high schools and "traditional" high schools of the time was the way the student's free time was used. Free time in the Manual Training schools was to be used by students to work on projects while students at the "traditional" schools spent their out of class time as they chose (Barlow, 1976, pp. 32-33).

Stephen Van Rensselaer founded the Rensselaer Institute in Troy, New York in 1824. The school combined "science and practical work for a better understanding of the relationships between chemistry, natural philosophy, and mathematics, agriculture, and mechanics" (Barlow, 1976, p. 33). Van Rensselaer created the institute for the purpose of instructing students in the "application of sciences to the common purposes of life" (Barlow, 1976, p. 33; Hawkins, Prosser, & Wright, 1951; True, 1929).

In 1832 the House of Representatives of Pennsylvania requested that its Education committee write a report about manual labor academies. The report stated that there was a breakdown of the rich and poor class distinctions, that manual labor did not divert from classical studies, educational expenses was reduced by fifty percent with "manual pursuits," and that the "combination of studies and labor contributed to the development of a better citizen" (Barlow, 1976, p. 32).

According to Bennett in an establishing statement dated June 6, 1879 the purpose of the Manual Training School of Washington University in St. Louis Missouri was to instruct students

in math, drawing, English, and to instruct "in the use of tools." The instruction of tools curriculum taught skills for such things as carpentry, woodturning, pattern making, and various other shop skills of the time (Bennett, 1926).

Other Manual Training schools of similar status could be found elsewhere in the nation such as The private Chicago Manual Training School which opened its doors in February 4, 1884 which eventually became affiliated with the University of Chicago. March 3, 1884 the first publicly supported manual training high school was opened in Baltimore, Maryland. In September of 1885 Philadelphia opened The Philadelphia Manual Training School with public funds. In 1885 The Toledo Manual Training School, 1886 saw the open doors of the Technical School of Cincinnati open, which eventually moved to the University of Cincinnati. September of 1888 The Manual Training School of St. Paul was ready for enrollment in Minnesota. There were many other schools opened to the public in cities around the nation such as New Orleans, LA; Indianapolis, IN; Louisville, KY; Brooklyn, NY; Cambridge, MA; and Muskegon, MI. Many other similar schools opened throughout the country under the same title or using similar terminology calling themselves "Technical" or "Vocational" schools. Eventually many public secondary schools added "vocational" programs within the preparatory curriculum. (Bennett, 1937 pp. 347-397).

Agricultural Education

Agricultural education was primarily promoted by various societies during the late Colonial times. Some societies pushed for agricultural education from a scientific standpoint while others were interested in "practical" agriculture. The first society formed was the Philadelphia Society for Promoting Agriculture established in March 1785. Some active

members of the agricultural societies of the time according to Melvin Barlow included Benjamin Franklin, George Washington, Robert Livingston, and John C. Calhoun, just to name a few. The societies were interested in increasing the quality of production in agriculture through sponsored research and experimentation (Barlow, 1976; Periam, 1874).

In 1749 Benjamin Franklin suggested the teaching of some basic agriculture through a proposed academy in Philadelphia. Nothing would come of the proposal. However, beginning in 1785 with South Carolina a state society of agriculture was organized, New York State followed in 1791, and in 1792 the state of Massachusetts had an organized state agricultural society (Knowles, 1962). After the American Revolution many regional and local agricultural societies began to promote agricultural production "through printed materials, contests, and fairs." (Knowles, 1962, p. 23). In 1852 the local and regional societies formed the United States Agricultural Society (USAS), in 1960 the USAS reported that 941 agricultural organizations existed (Knowles, 1962).

In 1839 a farmer's institute movement began in Massachusetts. By 1880 "farmer institutes had been established in 26 states," and by 1899 "farmers institutes were organized in forty-seven states and territories." (Knowles, 1962, p. 40).

Many of the early educational centers including lyceums, academies, colleges, universities, and the like added courses in agriculture. In the early half of the nineteenth century it was not uncommon to find courses in agriculture on the secondary level; however, this was primarily left up to local interests. Congress aided agricultural education by memorials presented to Congress requesting endowments to state universities to promote agricultural development (Barlow, 1976, p. 32).

Post-Secondary Vocational Education at Land-Grant Institutions

According to the National Association of State Universities and land-grant Colleges (1995) (NASULGC) the original purpose of land-grant institutions was to "teach agriculture, military tactics, and the mechanic arts as well as classical studies so that members of the working classes could obtain a liberal, practical education." (Morrill Land-Grant, 1862).

The start of the land-grant institutions and the Morrill Act of 1862 and 1890 had their roots in Illinois and are owed to a gentleman by the name of Jonathan Baldwin Turner. Barlow stated that Turner believed there are two distinct classes within society, the professional class and the industrial class. Thus he believed there should be an industrial university in every state. Illinois farmers took to Turner's idea and on February 8, 1853 the State Legislature passed, and the governor approved, a resolution asking for federal support. The U.S. House of Representatives and the Senate received the memorial on March 20, 1854 and took no action. On December 8, 1857 a bill was introduced to the U.S. House by Justin Morrill of Vermont and was passed on February 7, 1859. President Buchanan vetoed the bill "on the grounds that it violated the traditional policy of the federal government, which until then had left control of education to the states." (NASULGC, 1995, p. 5). Justin Morrill reintroduced the bill to the House of Representatives on December 16, 1861 and it was passed by the House, the Senate followed suit, and it was signed by President Lincoln on July 2, 1862 (Herren & Hillison, 1996; Knowles, 1962; NASULGC, 1995; Wirth, 1972).

The Morrill Act donated public lands to each state in order to establish colleges for agricultural and mechanical arts purposes. One of the many stipulations of the Act was that any state in rebellion against the union was not allowed to receive public lands. This was brought on by the continued Civil War. By the wars' end those states of the Confederacy did receive the

land grants. And thus the 1862 land-grant status of state post-secondary educational institutions was formed for the primary purpose of vocational education in agriculture and manual arts (Morrill Land-Grant, 1862).

With the authorization of funds from the Hatch Act of 1887 another component of the land-grant was added, the agricultural experiment station. In 1914 the Smith-Lever Act allowed for an additional component to the land-grant university, the Cooperative Extension Service. The Cooperative Extension Service was the method, which would be used to disseminate information from the Agricultural Experiment Stations to the states' populous (NASULGC, March 1995).

Section Summary

From apprenticeships to societies, from manual training high schools to the land-grant institution, vocational education and agriculture have continued to play a role in American education. The only variations of the teaching of a skill or vocation have been by the method used. A master teaching a skill or trade to a younger apprentice, usually involving a father and a son, was known as an apprenticeship. In Europe if the apprentice were not learning a trade from their father, they would have lived with or by means of their master. Today the apprenticeship has taken a new shape, that of an internship where a student is placed in the field, usually after some formal structured training. The student is responsible for learning what the "real world" is like through their respective trade.

Agricultural societies began to sprout in America to aid in the dissemination of information regarding practices in agricultural production. These societies held formal and informal gatherings as well as fairs, similar to present day county fairs.

Manual training high schools began to catch on throughout the nation where young men would be able to attend to learn a skill or trade besides the traditional classics taught in education, many of the training high schools became affiliated with some post-secondary institution. Along with the manual training high school the Morrill Land-Grant Act of 1862 was signed creating a new forum for vocational education at the post-secondary level in regards to agriculture, the mechanical arts, and engineering. The land-grant institutions began to educate, perform research, and disseminate information to where it was needed within the region and state of its affiliation. In the mid-to-late 1800s and early 1900s various American philosophies began to emerge towards vocational education, to this day vocational education takes these philosophies to heart.

Vocational and Technical Education Philosophers

Our present day system of vocational and technical training and education's philosophical underpinnings can be found to resemble, if not be dictated by, the individual and combination of philosophies of historical figures such as Booker T. Washington, his mentor, General Samuel Chapman Armstrong, along with David Snedden, Charles Prosser, and John Dewey.

Booker T. Washington

In the mountains of southwest Virginia, Booker T. Washington was born into slavery of nine years and was still a child when freed after the surrendering of the Confederacy to the United States. Being illiterate and uneducated as a slave, Washington eventually became educated and at age 16 ended up at Hampton Institute in 1872 (Denton, 1993; Gordon, 1999; Washington, 1901). By the time he left the institute in June 1875 Washington and his philosophy

had been set. In 1881, under the recommendation of General Samuel Chapman Armstrong, Washington became the principal of a "new school in Tuskegee, Alabama" (Gordon, 1999, p. 18). Washington had established Tuskegee Institute on the same principles that Hampton Institute was founded on. "Washington built programs in academics, agriculture, industrial arts, health, religion, and music around the community needs of Tuskegee and its environs" (Denton, 1993, p. 95). Vocational programs such as electricity, carpentry, stationary engineering, painting, blacksmithing, wheelwriting, and tinsmithing were developed at Tuskegee Institute (Denton, 1993; Gordon, 1999; Washington, 1901).

One of the requirements to receive an education at Tuskegee Institute was that of labor. Each student was required to perform some manual labor "not only to develop self-discipline but also to develop healthy respect for honest labor" (Gordon, 1999, p.18). Washington believed in the style of education that makes use of the student's psychomotor and cognitive learning domains of "learning by doing" (Gordon, 1999, p.18). According to Gordon (1999) "Washington defined an educated person as one possessing (1) both cognitive and problem-solving skills, (2) self-discipline, (3) moral standards, and (4) a sense of service." (Gordon, 1999, p. 19; Washington, 1901).

By Booker T. Washington's definition of what an educated person must possess we can begin to see similarities to John Dewey's philosophy of education and the educated human spirit. While on the other side of the coin we are able to see the Snedden-Prosser philosophy emerge by teaching more of an industrial art and technical skill compared to Latin and Greek philosophy.

David Snedden and Charles Prosser

David Snedden, faculty member at Columbia University in New York, had a very simplistic view on vocational education, which was to prepare the students for occupations and skills at which the students excel. In 1910 Snedden was appointed Commissioner of Education for Massachusetts (Gordon, 1999).

When Snedden was still a faculty member at Columbia he mentored a student by the name of Charles Prosser, who quickly became a believer in Snedden's educational philosophy and the "Snedden doctrine of social efficiency" (Camp, 1982, p. 36).

According to Camp (1982) the doctrine of social efficiency came through the effort of Snedden combining the teachings of "prominent economists, sociologists, psychologists and educators" (Camp, 1982, p. 36). The philosophy of Snedden and Prosser towards vocational education came from Snedden's doctrine. One of the thoughts of the time, which can be seen in early vocational education, that follows the doctrine is one of social classes in society, one class of followers and another of leaders (Camp, 1982). Snedden thought, "schools for lower class youth should emphasize physical training, moral values training, vocational education, and limited literary training." (Camp, 1982, p. 37). This notion today seems almost unconceivable due to political and social implications. The thought of social classes in America is disturbing considering how the country was founded. Throughout American history there has been a clear distinction of social classes and there continues to be. Snedden's philosophy that the "lower class" should have a specified education that only taught physical training, vocational skills, and only a limited amount of literary training seems to be a way of keeping any group of individuals into a "lower social class" by the careers or jobs that have been chosen (Camp, 1987; Gordon, 1999).

No matter how absurd some of the philosophies that were held within the doctrine of social efficiency seem today, it was a method to solve some of the early twentieth century problems of a lack of skilled laborers or trades persons. Industry in the early part of the 1900's was at a boom stage, industry needed workers fast, and preferably already trained.

The doctrine had some basic premises to it;

- a) The corporate/industrial/urban complex is the way of the future,
- b) the individual is no longer the primary concern, the group as a whole is,
- c) society is separated into socioeconomic classes, and should be educated as such,
- d) educating the "rank and file," Snedden's term for the working class, should emphasize physical training, moral values training, vocational education, and limited literary training and the skills taught should be as industry dictates is necessary, and
- e) the ultimate responsibility of vocational education is to produce a productive, happy work force responsive to the needs of industry and contributing to the social good. (Camp, 1982, p. 38).

One of the main affects the previous mentioned doctrine had on education was the separation of vocational education from the traditional, classic education. The math, science, and other traditional education topics would only be discussed if it was of direct relation to the vocational skill or training (Camp, 1982).

Charles Prosser, being a devout believer in Snedden and the doctrine of social efficiency, created a group of theorems now known as: Prosser's Sixteen Theorems.

1. Vocational Education will be efficient in the proportion as the environment in which the learner is trained is a replica of the environment in which he must subsequently work.
2. Effective vocational training can only be given where the training jobs are carried on in the same way, with the same operations, the same machines as in the occupation itself.
3. Vocational education will be effective in proportion as it trains the individual directly and specifically in the thinking habits and the manipulative habits required in the occupation itself.
4. Vocational education will be effective in proportion as it enables each individual to capitalize his interests, aptitudes, and intrinsic intelligence to the higher degree.
5. Effective vocational education for any profession, trade, occupation, or job can only be given to the selected group of individuals who need it, want it, and are able to profit from it.
6. Vocational training will be effective in proportion as the specific training experiences for forming right habits of doing and thinking are repeated to the point that these habits become fixed to the degree necessary for gainful employment.
7. Vocational education will be effective in proportion as the instructor has had successful experiences in the application of skills and knowledge to the operations and processes he undertakes to teach.

8. For every occupation there is a minimum of productive ability which an individual must possess in order to secure or retain employment in that occupation.
9. Vocational education must recognize conditions as there are and must train individuals to meet the demands of the "market" even though it may be true that more efficient ways for conducting the occupation may be known and better working conditions are highly desirable.
10. The effective establishment of process habits in any learner will be secured in proportion as the training is given on actual jobs and not on exercises or pseudo jobs.
11. The only reliable source of content for specific training in an occupation is in the experiences of the masters of that occupation.
12. For every occupation there is a body of content which is peculiar to that occupation and which practically has no functioning value in any other occupation.
13. Vocational education will render efficient social services in proportion as it meets the specific training needs of any group at the time that they need it and in such a way that they can most effectively profit by the instruction.
14. Vocational education will be socially efficient in proportion as in its methods of instruction and its personal relations with learners it takes into consideration the particular characteristics of any particular group which it serves.
15. The administration of vocational education will be efficient in proportion as it is elastic and fluid rather than rigid and standardized.

16. While every reasonable effort should be made to reduce per capita cost, there is a minimum level below which effective vocational education cannot be given, and if the course does not permit this minimum of per capita cost, vocational education should not be attempted (Prosser & Allen, 1925).

The Smith-Hughes Act of 1917 was signed by President Woodrow Wilson on February 23. There were four key individuals that developed what we know as the Smith-Hughes Act. Charles Prosser was the professional educator of the group and worked with Senator Carroll Page of Vermont to write various bills that Page proposed. Former Georgia Governor turned Senator Hoke Smith was a strong proponent of vocational education and agricultural education in general. Senator Smith had success in the past with proposed bills such as with the Smith-Lever Act of 1914. Smith was also named chairman of the Senate Committee on Education and Labor. The last individual that had a significant role in the Acts passage was Representative Dudley M. Hughes of Georgia. Hughes was the Chairman of the House Committee on Education; therefore, being very influential and known as a "skilled parliamentarian and politician" (Camp, 1987, p. 6; Gordon, 1999).

According to Camp (1987) Page was not a great parliamentarian and "one wonders whether Page could have ever succeeded in securing the passage of the bill without Smith's support" (Camp, 1987, p. 5) even though Charles Prosser mostly wrote the bill (Camp, 1987; Gordon, 1999; Wirth, 1972).

Once the bill was passed and signed, its legislation put a helping hand in to vocational-technical education by providing 1.7 million dollars toward vocational education. To be eligible to receive federal funds the state would be required to establish a state board of vocational education (Gordon, 1999). Following the Snedden-Prosser philosophy of vocational education

the Smith-Hughes Act began to separate vocational education from the traditional academics. For the years that followed the passing of the Smith-Hughes Act vocational education was separated from traditional education, and the skills taught were shadowed industry's need leaving a humanistic approach out from vocational education (Gordon, 1999; Lozada, 1999; Malpiedi, 1987).

John Dewey

A close examination of literature about John Dewey shows that he was a strong proponent of vocational education however, he had a different view than the Snedden-Prosser philosophy of the group before the individual, separate schools, and of a differentiated socioeconomic class system. From the careful study of the writings of Barlow (1976), Dewey (1913) Gordon (1999), Venn (1964), and Wirth (1972), the literature indicated that the Prosser philosophy of vocational education must be separate from traditional academics and that traditional academics should only be assimilated into vocational education when necessary. Dewey's thoughts took the opposite approach by assimilating vocational education into traditional academics. Dewey took a very humanistic approach and philosophy to education and vocational education. Education should take into consideration the individual and what science and technology holds for the future of the democracy when program development takes place. In simplicity, Dewey believed that a human should not be deemed to be at a mindless laborious job without having some education in the arts and classics of academia to be able to broaden ones morals and ethics for the betterment of society (Dewey, 1913; Gordon, 1999; Wirth 1972).

Section Summary

Throughout American history education has played a role in the melding of society and economics. Educational and social philosophers from Benjamin Franklin, Jonathan Baldwin Turner, and Justin Morrill to Booker T. Washington, Snedden, Prosser, and John Dewey have all played critical roles in how we are presently taught and how we presently educate students. It is important that we examine their philosophies of the time and how the world around them may have affected education and society. Since in many cases, we continue to follow these people's ideas, and continue to hold vocational education up to their ideals we must look back and see if we are truly acting on what has been set forth or if it is time for a change.

1862 Land-Grant Institutions with Two Year Programs in Agriculture

There are 17 1862 Land-grant institutions with two year agricultural programs and/or short courses in agriculture (Appendix A). These include the 13 students enrolled at American Samoa Community College and the University of Maine-Orono with only one student enrolled, leaving 15 1862 land-grant institutes nationally with more than one student enrolled. Each program history is unique; however, there seems to be some similarities when it comes to the main purpose or mission for which it was founded. Each of the 15 institutions mentioned earlier was contacted either by e-mail or by phone for information regarding when the program was organized, student enrollment, and whether or not the program goes through an evaluation/review or assessment, and if a copy of information regarding the program's history, and the most recent program review or evaluation could be obtained. Very few of the institutions obliged the requests or sent minimal information.

Purdue University

Purdue University's program is completely integrated into the four-year program departments. There is no separation between faculty or funds. There is no review of the two-year associate degree program on its own (Allen D. Goecker, personal communication, February 15, 2000).

From the 1880s until 1995 the College of Agriculture at Purdue University operated an eight-week Winter Course during the months of January and February. Due to a lack of interest and enrollment the short courses were discontinued. The short course targeted individuals from farms or agribusiness who were not interested in pursuing an associate degree. In 1973 the school established an associate degree program. There are currently six areas that one can obtain an associate degree in agriculture: agricultural economics, agricultural systems management, agronomy, animal science, horticulture, and general agriculture (Allen D. Goecker, personal communication, February 15, 2000).

University of Nebraska

The Nebraska College of Technical Agriculture, which is part of the University of Nebraska, has its own campus in Curtis, Nebraska. In 1911 the Nebraska state legislature called for the establishment of an agricultural school in the southwest region of the state. The Nebraska School of Agriculture (NSA) was created as a secondary education institution emphasizing agricultural studies in 1913. In April of 1965 the legislature approved a resolution that would allow collegiate level courses at NSA. In June of 1968 NSA became the University of Nebraska School of Technical Agriculture (anonymous, personal communication, February 12, 2000).

In 1986 UNSTA's future was looking grim due to shortfalls in the state budget. The governor of the state, Kay Orr, visited the school in 1987 and urged the continued existence of the school with new "roles and programs." A task force with representatives from other two-year ag programs, business and industry conducted surveys and visited UNSTA and recommended new emphasis and courses. In April of 1993 the Coordinating Commission for Post Secondary Education also concluded and recommended that the programs housed at UNSTA be continued, the fight for life was won (anonymous, personal communication, February 12, 2000).

UNSTA's mission is to provide educational programs to the agricultural-community; students of the program will master scientific and technological skills, leadership capabilities, and communication skills along with the agricultural specialty courses in which the student is enrolled (anonymous, personal communication, February 12, 2000).

As of the 1997-1998 academic year there were 276 full time students and 90 part time students who include enrollment in courses in the evening, distance learning, and short courses. UNSTA has 19 full-time faculty members and 10 part-time faculty; 1 professor, 9 associate professors, 8 assistant professor, and 1 instructor. UNSTA sits on a 78-acre campus and has a total of 172,000-sq. ft. of instructional classroom and laboratory space, and has a 1,370-acre farm that includes grain storage facilities, swine units, and cattle facilities (anonymous, personal communication, February 12, 2000).

Ohio State Univerity

Ohio State University has a two-year associate degree program with its own campus in Wooster, Ohio. The school is known as The Ohio State University Agricultural Technical Institute (ATI). ATI "serves over 900 students every year" (A. Mokma, personal communication,

February 24, 2000). Ohio State ATI opened its doors in 1972 and operates an 1,800-acre farm laboratory for dairy, beef, swine, and crop production; a horse training stable; and production greenhouses and nursery" (A. Mokma, personal communication, February 24, 2000).

Ohio State ATI opened its doors to students in 1972, incoming students must have a high school diploma or a GED. Ten percent of the students at Ohio State ATI have a disability, usually a learning disability or an attention deficit disorder. Ohio State ATI is proud to boast that over the past five years, data have shown that over 99 percent of Ohio State ATI's graduates is employed in the chosen field within three months of graduation" (A. Mokma, personal communication, February 24, 2000).

University of Wisconsin

The University of Wisconsin has what is called The Farm and Industry Short Course Program (FISC) with an enrollment of 123 students. The program was established in 1885 and is claimed to be the oldest of its kind in the country. The program is offered November through March and a student may receive a one or two year certificate once the program is completed. Students must maintain a "C" average to stay in the program, and 15 credit hours may be transferred towards a B.S. degree. The courses are taught by college of agriculture faculty and some courses are taught jointly with the degree program (TAA web site).

Other Land-Grant Programs

North Carolina State University's Agricultural Institute Program was organized in 1959 with courses first offered in the Fall of 1960 and boasts 461 students enrolled presently and more than 3,800 alumni (TAA web site).

The Institute of Agricultural Technology at Michigan State University has 403 students enrolled and was founded in 1894 (TAA web site).

Other 1862 land-grant universities with two year agricultural programs or short courses include (Appendix A); the Universities of Maryland, Connecticut, Massachusetts, New Hampshire, Ohio State University, South Dakota State University, Louisiana State University, Utah State University, and Virginia Polytechnic Institute and State University (FAEIS Report, 1999; TAA web site 1999).

The program history at Pennsylvania State University was not known "the program has been in place longer than our current faculty can remember" (F. Goode, personal communication, February 14, 2000). No one can remember when the program was last evaluated at Penn State (F. Goode, personal communication, February 14, 2000).

Section Summary

What better place to contain a two-year agricultural program. Land-grant institutions have the establishment, resources, research, faculty, and facilities to offer programs that meet the ever-changing needs of the agricultural environment and industry. It is not as important to know the varied institutions history as it is to know that each program was created to meet a need of the citizens that reside within the institutions regions and state.

A land-grant institution's mission is to meet the needs of its state's citizens and it is imperative that the institution does everything in its power to do so. A method of meeting the needs of the state's citizens is through an array of traditional and non-traditional course offerings such as an associate degrees, vocational programs, or short courses (Morrill Land-Grant Act, 1862; NASULGC, 1995).

Virginia Polytechnic and State University Two-Year Program

The Early Twentieth Century Two Year Program

In the early part of the twentieth century there may have been some form of a two-year agricultural technology program, to what extent is unknown. In The Bugle, the Virginia Polytechnic Institute yearbook of the time, there has been some use of terms when describing groups of individuals. On page 10 of the 1910 Bugle "Second Year Apprentices" and "(Special Agriculture)" is mentioned with the names of presumably students and the cities, counties, and or state they are from. From 1910 through 1923, with the exception of 1911 and 1912 those phrases or similar were used. Other terms or phrases used include; "Two-Year Men" (The Bugle, 1914, p. 143), "First Two-Year Agriculture" (The Bugle, 1915, p. 150), "Sophomore Two-Year Agriculture Class" (The Bugle, 1915, p. 156), and "Two Year Aggies." (The Bugle, 1921, p.149)

On page 259 of the 1916 Bugle there was a brief statement of what was accomplished under the administration of President Barringer including a brief statement that short courses for farmers were established in the last year of Dr. Barringer's term (Appendix B). Another piece of evidence of agricultural short courses and of a two-year agricultural program at VPI was an advertisement (Appendix C) for Virginia Polytechnic Institute, Agricultural and Mechanical College. The exact year of the advertisement is uncertain but can be presumed circa 1915 or 1916 because of the following statement "The next session opens Wednesday, September 20, 1916." Within the advertisement it gives a brief statement "Two-year short courses in agriculture, and Farmers' winter short courses." It can be assumed between terms used in The Bugle yearbooks from 1910, 1913 through 1923, the administration brief, and advertisement that a form of a two year agricultural program and short course had been offered at Virginia Polytechnic Institute and State University in the early twentieth century.

History of the Present Day Two-Year Agricultural Technology Program at Virginia Tech

There were many individuals and organizations that played a key role in the establishment of the Agricultural Technology Program at Virginia Tech. The Virginia Farm Bureau Federation helped to begin the ball rolling through its political ties to the State Capital in Richmond, Virginia and with the administration at Virginia Polytechnic Institute and State University. Dr. James Nichols the then Dean of the College of Agriculture and Life Science was responsible for setting the stage to begin the establishment of the program. Dr. David Ford, the then Assistant Dean and Director of Resident Instruction, which became Vice Provost for Academic Affairs, began to do the necessary research to see what it would take for the establishment of such a program. And Dr. Gary Minish, the first named Director of the Program, researched other two-year agricultural programs at land-grant institutions, developed the course curriculums, schedules, and hired the necessary faculty and support staff for the program. There was great controversy between the College of Agriculture and Life Science faculty and administration after the two-year program was proposed. The program initiation came from the top down, from the administration to the faculty instead of the faculty bringing a proposal for a two-year program to the administration. Some of the concern had to deal with finances, the college and many of its departments were strapped for funding to continue to support the programs already in place. From the faculty's perspective this was going to add to the financial burden of having to carry an additional program without the proper resources (J. Crunkilton, personal communication, February 21; D. Ford, personal communication, February 24, 2000; G. Minish, personal communication, May 15, 1999; J. White, personal communication, March 23, 2000).

The first students of the Agricultural Technology (AT) program walked through Virginia Tech's hallowed halls in the fall of 1987, with the first graduating class in the spring of 1989.

The mission of the Agricultural Technology Program is to develop the human resources to fulfill technical and management level needs in a rapidly changing and diverse agricultural society. The primary emphasis in the Program is the application of content learned in the classroom, to address the issues, problems, and trend in the agricultural industry (AT web site, 2/16/00).

This section of the literature review will discuss some of the who, when, and why of how the Agricultural Technology Program (AT) at Virginia Tech became established. The information found in this section was taken completely from formal documents, personal interviews, e-mails, correspondence letters, and other personal communication kept by the AT administration, and other various methods to gather this material. There was no information found using traditional literature review methods. With the material that was obtainable, the researcher has triangulated much of the information contained within this document to validate its correctness.

Within the recent history of the Agricultural Technology Program there have been three directors; Dr. Gary Minish from 1986 until April of 1988, Mr. Michael Bell from August 1988 until 1993, and Dr. John Crunkilton from 1993 until the present time. According to the Agricultural Technology Report of the Three-Year Review Committee, the history of the proposed establishment can be traced back to the early 1950s. The College of Agriculture and Home Economics conducted a self-study of its role and found that it should establish a two-year program. In the mid 1960s a bill recommending a two-year agricultural program was introduced in the Virginia Senate Finance committee, the bill was endorsed but went no further. A study commission was appointed by Governor Mills Godwin in 1969, the commission issued a number of Virginia Agriculture position papers and one included the support of a two-year agricultural program at Virginia Tech similar to the North Carolina State University's program. It was not until

the mid 1970s when another special commission on the future of Virginia agriculture recommended the establishment of a two-year agricultural program at Virginia Tech that the ball actually began to roll (J. Crunkilton, personal communication, February 21, 2000; Report of the Three Year Review Committee, 1991).

Through many interviews and conversations with faculty at Virginia Tech that include Dr. John White, Associate Dean of Academic Programs of the College of Agriculture and Life Science (CALS), Dr. John Crunkilton, Program Director of the Agricultural Technology Program, and various others, that would like to remain anonymous, stated that the push to have a two year associate degree program within CALS at Virginia Tech was made by the Virginia Farm Bureau Federation, agricultural industry representatives, and various others within the Commonwealth of Virginia.

In one letter to Mr Andre Viette dated October 21, 1982 it stated that:

Governor John Dalton appointed the Agricultural Opportunities Study Commission which recommended that Virginia Tech look into the need for a two-year agricultural program. The 1980 General Assembly passed a resolution which asked us to prepare, for the legislature, a plan which included a two-year agriculture program (W.E. Lavery, personal communication, October 21, 1982).

April 19, 1977 Dr. John D. Wilson, Provost of Virginia Tech, received a report from Dr. James Montgomery, from the Office of Institutional Research at Virginia Tech, of two-year agricultural programs from around the country and state. The report briefly listed various associate degree programs of agriculture and stated that Virginia Tech has not relinquished any rights to

confer an associate degree when the community college system in Virginia was established (J. Montgomery, personal communication, April 19, 1977).

There have been many statements regarding problems about placing a two-year program within CALS at Virginia Tech. A letter written September 8, 1978 proficiently summed up problems regarding the establishment of a two-year program at Virginia Tech. In the letter to Mr. James Berry, Vice President and Regional Executive of the National Bank and Trust Dr. James Nichols, Dean of CALS wrote:

There are problems, however, as one would expect and many things to consider. We are now turning away many qualified students who apply for regular four-year programs. Would we turn more away to make room for the two-year students? And what would be the community colleges' stance on our offering "competitive" two-year Associate Degree Programs? Also the Virginia State Council of Higher Education would have to approve such a program . . . Our faculty size, while quite sizable, would be further pressed to provide the needs for such a new program (J. Nichols, personal communication, September 8, 1978).

It can be noted by statements within the September 8, 1978 letter that Mr. Berry and the National Bank & Trust were in favor of the establishment of the AT program. Dr. Nichols also made statements regarding his favoritism of a proposed program, "I support your recommendation for the establishment of a two-year agricultural program at this institution"(J. Nichols, personal communication, September 8, 1978).

A January 4, 1979 letter by an extension agent to Dr. Nichols questioned why Virginia Tech did not have a two-year agricultural program. The extension agent made mention of many high

school students, after graduation, who head out of state to a two year program held at another land-grant institution. In the response letter from Dr. Nichols to the extension agent, Dr. Nichols reported that Virginia Tech was not approved to have a two-year program. However, in an April 19, 1977 report from Dr. James Montgomery to Dr. John D. Wilson, Provost of Virginia Tech, Dr. Nichols was sent a carbon copy. To reiterate one of the points in the report, "Virginia Tech has not relinquished any rights to confer an associate degree when the community college system in Virginia was established"(J. Montgomery, personal communication, April 19, 1977). The letter also stated that if the institution would like to begin to confer a degree program it must be approved by SHEV. In the response letter Dr. Nichols again stated that "I personally support the idea" (EJ. F. Diem, personal communication, January 4, 1979; J. Nichols, personal communication, January 30, 1979).

A guidance counselor at Southampton Academy wrote a response letter dated October 21, 1980 to Dr. David Ford, Assistant Dean and Director of Resident Instruction at the time, who also forwarded the letter to Dr. Nichols. The letter stated that the Academy had 13 students in the previous seven years who went to North Carolina State University's two-year Agricultural Program. She believed that the number would have been higher if not for the cost of paying out-of-state tuition. She stated "I strongly recommend this program in Virginia for our students" (M. T. Flowers, personal communication, October 21, 1980).

By April of 1981 it can be assumed a committee regarding the two-year agricultural program existed. Attached to a memo from the Virginia Farm Bureau Federation regarding a meeting about the two-year agricultural course at Virginia Tech dated April 3, 1981 is a sample of course requirements and program of study. As the letter indicated this memo was sent to the

committee on two-year agricultural course at VPI & SU (A. Hamilton, personal communication, April 3, 1981).

In an Associated Press article titled: Degree Proposal Causes stir from the September 8, 1981 issue of the Richmond Times-Dispatch it stated that a 1980 governor's study commission recommended that Virginia Tech consider a two-year agricultural program. The article goes on to state that the Virginia Farm Bureau insisted that Virginia Tech is the "only institution that could run" a two year agricultural program. The article quoted Perry Adams, vice chancellor for academic affairs for the state community college system, as stating that there are already adequate two-year programs within the community college system. Dr. Nichols is also quoted as saying, "Virginia Tech can develop a super program" (Associated Press, 1981).

The Virginia Farm Bureau began to meet with the Virginia Community College personnel to discuss the two-year agricultural program at Virginia Tech and to help put anxieties to rest of the community college system losing enrollment to the proposed Virginia Tech program. This can be substantiated by a memorandum from the office of the president at Blue Ridge Community College about when and where the meeting will be held (J. A. Armstrong, personal communication, January 20, 1982).

By February of 1982 it is shown through memos and letters that people are beginning to discuss and suggest possible courses for the proposed agricultural program. From a March 8, 1982 memorandum to Dr. Nichols from Dr. Ford about the program, the first sign of the now name of the program shows up in the subject, Ag. Technology Program. The memorandum discussed a list of courses, identified possible faculty, and created the course syllabi (D. Ford, personal communication, March 8, 1982; P. P. Graham, personal communication, February 5, 1982).

In a March 29, 1982 response letter to S. T. Moore, the president of the Virginia Farm Bureau Federation, Dr. Perry Adams, vice chancellor of Virginia Community College System, showed his definitive objection to the proposed program at Virginia Tech. "It is also evident that you cannot convince me that Virginia Tech should enter into the two-year program field, and I will continue to object to that idea" (P. Adams, personal communication, March 29, 1982).

From March 22 of 1982 through April of 1982 a greater number of correspondences began to take place between Dr. Nichols and a steering committee for the agricultural technology program. These letters are in regards to courses, funding, schedules, and updated information about the proposal process, and SHEV.

In an article by Virginia Churn in the May 28, 1982 Richmond Times-Dispatch stated that the State Board for Community Colleges approved a resolution opposing the proposed two-year agricultural program at Virginia Tech (Churn, 1982).

By June 7, 1982 formal proposals for the "Agricultural Institute" began to appear. The proposal began to discuss justification showing enrollment in like programs around the country, admissions, advising, housing, financial aid, courses, specializations, and needed funds. Prior to June 9, 1982 the Undergraduate Studies and Affairs Committee (USAC) of the College endorsed the proposal. The USAC endorsement was found on an unofficial memo to Dr. Nichols from "David," presumably Dr. David Ford (D. Ford, personal communication, June 9, 1982).

By July 22, 1982 a formal copy of the resolution passed by the State Board for Community Colleges showing opposition to the proposed two-year agricultural program was received by Dr. Nichols (J. Hinson, personal communication, July 20. 1982).

In a January 4, 1983 letter from Gordon Davies, Director of the Council for Higher Education in the Commonwealth of Virginia stated that "Senators Howard Anderson and Elmon

Gray have asked the State Council of Higher Education to examine the feasibility of a two-year Agricultural Program at Virginia Tech . . . A report of that study will be presented to the Senators in Summer 1983" (G. Davies, personal communication, January 4, 1983).

By August of 1985 another draft proposal for the Agricultural Technology Program at Virginia Tech was developed and circulated.

On April 30, 1985 The Commission on Undergraduate Studies (CUS) Course Approval Committee rejected the Agricultural Technology Program. Dr. Larry Harris, Chair of the CUS Course Approval Committee (CAC), in a letter to Dr. Ford stated the CAC sent the proposal (for the agricultural technology program) back to the steering committee. The proposal was sent back due to concerns with; transferable credits, policy, resources, and other details not within the proposal (L. Harris, personal communication, Mar 1, 1985).

A December 3, 1985 letter was written to Dr. Nichols from M. R. Geasler, Director of the Virginia Cooperative Extension Service. In the letter Dr. Geasler showed support for the two-year agricultural program because of the need within the Commonwealth of Virginia, and his experiences with similar programs at Iowa State University and Michigan State University. Also on December 3, 1985 Dr. Peter Eyre, Dean of the Virginia-Maryland Regional College of Veterinary Medicine wrote a letter to Dr. Nichols. The letter Dr. Eyre wrote also showed his support for the establishment of a two-year agricultural program at Virginia Tech (P. Eyre, personal communication, December 3, 1985; M. R. Geasler, personal communication, December 3, 1985).

On December 3, 1985 Dr. Nichols sent a letter to Dr. David Roselle, the University Provost, "to transmit, for consideration by the Commission on Undergraduate Studies and the University." The letter also indicated to Dr. Roselle that the credits received from the two-year program would not be transferable (J. Nichols, personal communication, December 3, 1985).

The Virginia Tech Spectrum on Thursday January 16, 1986 reported that the University Faculty Senate endorsed the Agricultural Technology Program on Tuesday January 14, 1986. The Spectrum also stated that at that time there were 30 Virginia students enrolled in a similar program in North Carolina (Virginia Tech Spectrum, 1986, pp. 1,7).

On February 5, 1986 the Council of Higher Education met. As stated on page 5 of the report the staff had prepared for Senators Howard Anderson and Elmon Gray recommended to the Council of Higher Education to deny approval to Virginia Tech for the two-year program. The staff also affirmed support of arrangements for Virginia native students to attend the North Carolina State University's program (Council of Higher Education, 1986, p. 5).

On February 10, 1986 the President of Virginia Tech, Dr. William Lavery, received a letter from Gordon Davies of the Council of Higher Education. The letter informed Dr. Lavery that the Council had approved the two-year agricultural program with the stipulation that that program be retracted if the 100 students enrollment per year is not met after each of the first 5 years (G. Davies, personal communication, February, 1986).

Governor Baliles of Virginia wrote a letter dated February 17, 1986 to the President of the Virginia Farm Bureau Federation, Mr. S. T. Moore, Jr. The letter reaffirmed the governor's support of the two-year program and the support of the budget amendments before the General Assembly to establish the two-year program at Virginia Tech (Baliles, personal communication, February, 17, 1986).

By the spring of 1986, there were still a number of issues that had not been resolved as shown in a memorandum to Dr. Gary Minish, the first acting director of the Agricultural Technology Program from the office of the Provost (Appendix D). These problems were in regard

to admission, diplomas, record management, budget, timetable, along with a host of other various issues (Appendix D) (E. W. Carson, personal communication, March 5, 1986).

During the spring of 1986 and spring of 1987, through letters and interviews, it can be found that many of the problems discussed in the March 5, 1986 Provost's Office-Minish memorandum were being resolved.

In a letter dated February 9, 1987 from Dr. Minish to Acting Dean, Dr. Neal Boyd, Dr. Minish showed concern and a hint of anger at some mishaps that had occurred regarding classrooms. Dr. Minish asked for support regarding the budget for positions and classroom assignments needed for the program (G. Minish, personal communication, February 9, 1987).

By the fall of 1987 the Agricultural Technology Program began to disseminate an education to those students who applied, were offered admission, accepted admission, and enrolled (G. Minish, personal communication, February 9, 1987).

Section Summary

In conclusion, the program has had a varied past, sometimes more ominous than others, but it was always an uphill battle and a great challenge to all of those who aided in the program's establishment.

Evaluation

Through personal correspondence, each of the 15 national 1862 land-grant institutions containing a two-year or short course agricultural program with more than one student enrolled was solicited for information regarding their program. The requested information was for some or all of the following; a program history, enrollment numbers, how often the program is reviewed or

evaluated, and for the most current copy of the program review or evaluation if any had been performed.

Many of the institutions have refused to acknowledge the received correspondence, others have stated that they were willing to send the requested materials but the researcher had never received them. Any information that has been received can be found in the following few pages.

Purdue University does not review or evaluate their two-year or short course agricultural program. The program is integrated with the four-year courses and only the academic departments of the college of agriculture are reviewed every five years, "there have been no formal reviews or assessments of the associate degree offerings" (A. D. Goecker, personal communication, February 17, 2000). While at Pennsylvania State University "no one remembers when it was evaluated" (F. Goode, personal communication, February 14, 2000). Penn State was not the only University where staff cannot remember the last two-year agricultural program review or evaluation that took place. For example staff at the University of New Hampshire cannot remember when their two-year program was last reviewed (R. Smick-Attisano, personal communication, February 24, 2000).

The Nebraska College of Technical Agriculture (NCTA) was last reviewed through a state mandated special task force made up of representatives from various members of other two-year agricultural programs and industry representatives from around the country. The task force acted as a lifeline to the college for its continued operation. NCTA has also gone through accreditation evaluation. The written report will be used by the North Central Association of Colleges and Schools' evaluation team. The report will also be reviewed by the University of Nebraska's administration, the Vice Chancellor of the Institute of Agriculture and Natural

Resources, the President of the University, and the Board of Regents (Anonymous, personal communication, February 12, 2000).

The last review that Ohio State ATI had done was a "zero-based" review of curriculum in 1994. The review's purpose was to revise curricular requirements for the associate degree programs (A. Mokma, personal communication, February 24, 2000). The specific objectives of the review were as follows;

1. reaffirm that our graduates are meeting the expectations of employers;
2. introduce some flexibility in our curricula for student choice on courses to be taken;
3. review our requirements in line with the Provost's call to reduce credit hours in baccalaureate programs; and
4. better align our curricular requirements with the expectations of external bodies such as the Ohio Board of Regents and the North Central Association (A. Mokma, personal communication, February 24, 2000).

The review process has taken six years to complete. The process included the following steps;

1994-95 The Academic Affairs Committee developed the strategy for curriculum review.

1995-96 The core concepts for the curriculum were rated by the Ohio State ATI faculty.

1996-97 Industry advisory committees reviewed the "faculty approved" core concepts.

1997-98 The Academic Affairs Committee reviewed the concepts identified by industry advisory committees to develop the core of general education areas for Associate of Applied Science curricula. In May, the faculty voted "proceed" with this proposal.

1998-99 The Academic Affairs Committee revised the proposal and presented it to the divisions for further discussion. On December 4, a faculty meeting held to vote on the proposed revisions. The proposal was modified and approved by a 28 (favor)-4 (opposed) margin. In January, the faculty began to develop courses to deliver instruction on the agreed upon concepts. Technology coordinators convened meetings of industry advisory

committees to review the general education core as the foundation for key technical concepts to be included in curriculum. In April, the Academic Affairs Committee approved changes in the Associate of Science degree requirements to reduce the credit hours to reflect the changes in the Associate of Applied Science degree requirements as well as changes made by the College of Food Agricultural and Environmental Sciences in the baccalaureate curriculum (A. Mokma, personal communication, February 24, 2000).

South Dakota State University's two-year program goes through an institutional review every five to seven years in conjunction with the four-year programs. The most recent review was in 1995. The review was broken into 15 different sections;

1. Description of program, college, institution, etc. . .
2. Trends
3. Program Goals and Objectives
4. Need for the program
5. Curriculum
6. Assessment Results
7. Outreach/Extension/Services
8. Research
9. Personnel (Faculty and Staff)
10. Information Resources/Libraries
11. Facilities
12. Equipment
13. Financing of Program
14. Comparative/Competitive position of overall program
15. Long range plans with implementation strategies and budget consideration (South Dakota State University, 1995).

Each section was made up of several different sub-sections and parts to fully assess and review all aspects of the program; however, there was not mention specifically about the two year program (T. Nichols, personal communication February 10, 2000; South Dakota State University, 1995).

In March of 1991 the Final Draft of the Report of the Three-Year Review Committee Report for the Agricultural Technology Program at Virginia Tech was released. The review is an extensive summary containing information about all aspects of the program including but not limited to; brief history, academic issues, administration, faculty & personnel, scholarships, funding, curriculum, student retention, extra curricular activities, market, job placement, and a summary. The report stated the strengths of the program to be;

- 1) the dedication of the students to achieving their goals of an education and career in the diverse field of agriculture,
 - 2) the excellent faculty and the availability of facilities located in CALS to sustain such a program,
 - 3) the support given by the agriculture industry and business throughout the Commonwealth, and
 - 4) the curriculum, which is well-designed to meet the objectives of the program
- (Report of the Three Year Review Committee, 1991).

The program weaknesses that were mentioned are as follows;

- 1) Reduced funding for operations each year the program has been in existence.
- 2) The transferability of credits, the credits do not transfer to the four-year programs at Virginia Tech. However, the credits will transfer to other institutions

and be awarded transfer credits. The lack of transferability has discouraged prospective students and/or their parents.

- 3) A lack of scholarship support (Report of the Three Year Review Committee, 1991).

Two Status Reports, one from 1998 and one from 1999, about the Agricultural Technology Program at Virginia Tech presented to the Virginia Farm Bureau Federation, made mention of some challenges the program will face. Each report included a challenge of securing additional faculty, providing more courses for the students to select from a wider range of electives, and "keeping the program practical and hands-on" (Crunkilton, 1998; Crunkilton, 1999).

Section Summary

The majority of the 1862 land-grant institution's two-year agricultural programs have not in recent years, if ever, gone through a formal review, evaluation, or have had performed a needs assessment. For those two-year agricultural programs that do, it seems that the review/evaluation/assessment is done in conjunction with the four-year programs, with an assessment of the college as a whole, or has only reviewed its curriculum.

Summary of the Literature Review

Vocational education has continued to change with political, economic, and social issues of the time. The literature has shown the beginning principles of vocational education from the biblical mandates to learn a trade, through the apprenticeships of Europe and America, to the utopian communities, educational societies, manual trade schools, to the establishment of the 1862 land-grant institutions. The changes within vocational education is also be attributed to the

changing and melding philosophies, from Fellenberg and Pestalozzi to Franklin, Washington, Snedden-Prosser, and Dewey. Every movement, every idea, every philosophy is similar but different. As the years go through the history of education we can see what those before us could not. We can examine, critique, and expand on those ideas, philosophies, and movements. As we look into the past we can notice that every idea, philosophy and movement was built on a past idea, philosophy, or movement. While education and vocational education continues to evolve through history, the educators and philosophers of the time take consideration of the socioeconomic situation at hand to create the newest educational methods of the time. However, without a proper examination of the past we are unable to learn for the future. One must study history so that one does not repeat mistakes. It is essential for every program to perform some method of program review or evaluation to see if it is necessary to not only update curriculum, but also to see if it may be necessary to remove and or add courses, specializations, change goals, or even restate the program mission. Every land-grant institution was created with the "industrial class" in-mind (Herren, Hillison, 1997). One of the purposes of the land-grant institution is to serve the people of the state by any traditional or non-traditional method. One method of meeting the demands of the state is the inclusion of two-year programs. If the needs of the people are not being met, then the land-grant mission is not being fulfilled (Morrill Land-Grant Act, 1862; NASULGC, 1995).

Virginia Tech being one of the prominent agricultural and engineering schools in the nation should continue to stand out as such by continuing to follow the land-grant mission, this includes the continued two-year Agricultural Technology program. The continued success of the Agricultural Technology program is based on economic, social, and industry trends, and directing the program and course material towards those trends. There are many ways that the

Agricultural Technology Program continues to follow trends of industry; a close working contact with employers in the agricultural community and by having students in the program perform a mandatory internship between their first and second year. Through examination of literature it is easy to see that some type of apprenticeship or internship has been an important part of education, especially when actual skills are taught. The literature review shows we can trace some form of skills or technical training from biblical times, through Europe, to Colonial America, and at present day as an internship. The apprenticeship has evolved some from biblical times from a father-son ideal to an internship where students are able to put their education to a practical use, and to be further trained in the field, or on-the-job.

As the Agricultural Technology Program enters into the new century it is important for the program to perform some type of evaluation, review, or assessment to continue the success of the program. By performing evaluations, reviews, or assessments, a program is able to gain a more profound understanding of the needs of its students, graduates and the industry for which the program graduates will enter. This idea is not a new thought, Booker T. Washington had a strong belief in producing a workforce that was needed by industry. Snedden and Prosser also believed in going to industry to mandate what curriculum must be taught in the classroom for students to gain employment. By performing some type of evaluation the program will be able to gain more information of how the program graduates feel. An evaluation will also provide needed information to the program about what the industry and labor force trends are and is expected of new workers, what changes the program must incur. And in the end, the program can use information gained from the evaluation, not only for program improvement but also as a marketing tool to prospective students.

Chapter 3

METHODOLOGY

The purpose of this chapter is to describe the research methodology used in the study, the population from which data were collected, describe the instrument (questionnaire) used to collect data, the procedures used to administer the instrument, and to explain the statistical procedures used to analyze the collected data.

Research Methodology

Dependent on what perspective one takes at the technique that was used in this study one would see from one side a summative evaluation, and from the other a formative style of evaluation. From the perspective of the subjects that were used to collect the data the evaluation can look as if it will be used as a summative evaluation because they have completed the program to which is being evaluated. According to Tuckman (1972) summative evaluation is to "determine whether a fully developed program is meeting its objectives" (Tuckman, 1972, p. 366). From the Agricultural Technology Program perspective the evaluation type was formative. According to Scriven (1991) formative evaluation is usually conducted for improvement of a program and is conducted more than once. The evaluation is typically performed from within the program. For purposes of this study the best description of an evaluation type would be one of an evaluation of past performance.

The research method of which the data was collected is that of a follow-up survey of the program graduates' perceptions.

A survey instrument was used as the means of collecting data, Sample survey instruments are presently a widely used and accepted method to provide data for social science research and

for administrative program purposes. One of the main purposes of a survey instrument is to provide for a description of the program, explanation of a program, and for the exploration on behalf of the program. (Babbie, 1990; Kalton, 1983).

Population/Sample

The population consisted of all of those that graduated from the two-year Agricultural Technology Program at Virginia Polytechnic Institute and State University from the date of the programs first graduation class (1989) to the fall semester of 1998. Because there was such a small number of subjects within the population, to prevent sampling error, and to be able to prevent any deviation of assumptions between the sample and the population the whole population was mailed an evaluation instrument.

Instrumentation

The instrument used in the study was created by using a template from the Academic Assessment Program at Virginia Polytechnic Institute and State University. The template was modified to fit the proposed needs and purposes of the Agricultural Technology Program.

A panel of experts was used to validate and identify the proper methods and questions to be placed or removed from the evaluation instrument. The panel consisted of internal faculty of the Agricultural Technology Program, faculty from within the College of Agriculture and Life Sciences, and a faculty member that specializes in program evaluation and statistics.

An additional panel of experts was utilized to aid in the categorization and sub-categorization of program graduates current occupations and to determine whether the occupation was a directly related to the agricultural industry.

The purpose of the survey instrument (Appendix F) was to collect information on the graduates' attitudes towards the Agricultural Technology Program, basic demographics, beginning job & present job salary, and recommendations for the program's improvement.

The instrument was broken into three distinctive parts. Part one consisted of 14 Likert-styled questions to provide insight into the graduate's attitude toward the program, faculty & staff, curriculum, and extracurricular activities. Part two consisted of 15 multiple choice and open-ended questions that related to the graduate's personal and demographic information, extracurricular activities, additional education, career, and salary. Part three contained six open-ended type questions, which the graduate was able to relay specific information about their attitudes towards program courses, curriculum, program services for the students, and any other recommendations.

Pilot Study

A pilot study was performed to determine reliability and understandability of the instrument by sending the instrument to 60 subjects chosen by using a random number chart produced using the statistical software package of Minitab on June 15, 1998. A second mailing was sent out on July 9, 1998. A total of 24 survey instruments were returned providing a response rate of 40%. When using an instrument for gathering data it must be tested to prove a consistency within its judgement questions. The instrument must be shown that it will be consistent on what it is testing (Hopkins, 1998). A test for reliability was performed to show "a reliable measure is one that provides consistent indications of the characteristic of being investigated" (The Joint Committee on Standards for Educational Evaluation, 1981, p. 120). Using SPSS, the judgement questions (Appendix F, 1-14) were tested for reliability using the

Cronbach Alpha method, also known as Coefficient Alpha. The questions were shown to be of reliable consistency with a Standardized Item Alpha of .7371.

Collection of Data

A packet containing a cover letter, questionnaire, an addressed and stamped return envelope, and a small gift (usually a magnet or sticker) was sent to each of the subjects. The stamped return envelope and gift were placed in the packet to encourage the subject to respond. A pilot study was performed to determine reliability and understandability of the instrument. Once the pilot study was completed the instrument was updated as deemed necessary by a panel of experts. Following the updating of the instrument, it was sent to the population of program graduates, which included those that participated in the pilot study. Two more mailings were sent and a non-respondents analysis was performed completing the data collection process.

To allow the researcher to distinguish between the first, second, and the third mailings received, different colored ink was used to place the subject identification number in the top right hand corner of the instrument to allow for a more accurate account of the response rate. The first mailing black ink was used; the second mailing red ink was used, and on the third mailing green ink was used.

The first mailing was sent on February 1, 1999 to 365 people. The researcher received 22 "Return to Senders" leaving an N of 343. The first mailing produced a response rate of 35% with 121 survey instruments being returned. The second mailing was sent on February 22, 1999 to all of those who had not yet responded. The second mailing yielded an additional 65 survey instruments, which is 19% of the total N bringing a total response rate to 54%. The third mailing was sent on Wednesday April 7, 1999 to the non-respondents of the first two mailings. Twenty-

nine survey instruments were received in response to the third mailing achieving an additional 8% of the total N. All three of the mailings yielded a total 215 received survey instruments for a 62% response rate from an N of 343. This left a total of 128 or 37% non-respondents. A reliability test was run in SPSS using the Cronbach Alpha method, also known as Alpha coefficient, the Standard Item Alpha = .7661.

Non-Response Study

A non-response study was performed to determine if there was a difference between those graduates that returned an instrument from those that had not. If there was no difference between the respondents and non-respondents the researcher could assume that the findings of the study would hold true to the whole population. A total of 30 subjects of the 128 non-respondents were randomly chosen using a random number chart to perform a non-respondent's study. Approximately 20% of the non-respondents were chosen to perform the non-respondent's study. The researchers chose 30 subjects to round the number that is 23% of the non-respondent's. The study was conducted over a four day and night period where the researcher made an attempt to call the 30 subjects at various times through the day, evening, and night. Out of the 30 subjects chosen 11 phone numbers had been disconnected or were incorrect, at two of the phone numbers there was no answer at any time of the day, evening or night. At four of the phone numbers the subjects no longer lived at the residence taken from the Virginia Polytechnic Institute and State University Alumni services database and the researcher was not given any forwarding phone number. A total of 13 subjects were contacted giving a 10% response rate for the non-respondents study. A reliability test was run using SPSS, Standardized Item Alpha = .8235.

Method of Analysis

All of the survey instruments that had been received were examined for an excess of unanswered questions and were removed. The data were analyzed using SPSS, a statistical software package. Due to the possibility of guarded questions regarding personal information and the possibility of the subject not having an answer to some or all of the open-ended questions some of the survey instruments were not 100% complete. Therefore, when descriptive statistics such as, means, frequency and standard deviations were run on the data different Ns appeared.

Summary

The purpose of chapter 3 was to discuss the methods used in this study, how the survey instrument was developed, data collection procedures, and the statistical methods used for analyzing the collected data.

Chapter 4

RESULTS

The purpose of this chapter is to describe the data examined from the received survey instruments. The first section of this chapter describes the population/sample. The second section examines and describes the findings as dictated by the data received. The third section is the chapter summary.

Description of the Population/Sample

The population researched for this study was those students who had graduated from the Virginia Tech Agricultural Technology Program between May 1989 and December 1998. The first mailing of the survey instrument was sent on February 1, 1999 to 365 people. The researcher received 22 "Return to Senders" leaving an N of 343. The first mailing produced a response rate of 35% with 121 survey instruments being returned. The second mailing was sent on February 22, 1999 to all of those who had not yet responded. The second mailing yielded an additional 65 survey instruments, which was 19% of the total N bringing a total response rate to 54%. The third mailing was sent on Wednesday April 7, 1999 to the non-respondents of the first two mailings. Twenty-nine survey instruments were received in response to the third mailing, achieving an additional 8% of the total N. All three of the mailings yielded a total of 215 received survey instruments for a 62% response rate from an N of 343. This left a total of 128 or 37% non-respondents. A reliability test was run in SPSS using the Cronbach Alpha method, also known as Alpha coefficient, the Standard Item Alpha = .7661. A follow-up of the non-respondents was performed and showed no significant difference between the respondents and non-respondents. A total of 13 non-respondent subjects were contacted giving a 10% response

rate for the non-respondents study. A reliability test was run using SPSS, Standardized Item Alpha = .8235.

Description of the Respondents

The majority of the respondents was male (85.6%) between the ages of 20 and 29 (76.7%). The highest response came from the graduating class of 1989 (17.7%) with a close second from the 1998 class (14.9%). The response rate according to area of specialization and in descending orders was: Animal Agriculture (34.4%), Landscape and Turf Management (30.2%), Agribusiness (28.3%), and Crop Production (7.1%). The current mean income of the respondents was \$24,000 - \$26,999.

Findings

The first 14 questions on the instrument were opinions regarding the graduates overall experiences at Virginia Tech while enrolled in the Agricultural Technology Program. The first 14 questions on the instrument used a five-point Likert-style; one being strongly agree, three no opinion, and five being strongly disagree with the statement provided. Questions 15 through 27 and question 29 asked selected demographic and personal characteristics of the subject. Questions 28 and 30 through 35 contained five open-ended questions and two yes or no questions. Questions 28 and 30 through 35 asked for information pertaining to the subjects opinion, feelings, and recommendations for the Agricultural Technology Program.

Research question 1: How pleased were the graduates with the education they received through the Agricultural Technology Program?

The findings to research question one were based from questions 1 through 14 of the instrument. The top three questions that were rated with the highest agreement were: number 1, "my overall educational experience at Virginia Tech was worthwhile," was rated with a mean of 1.55 and a standard deviation of .61. Question 6, "the Agricultural Technology Program should continue the internship requirement for every student," had a mean of 1.35 and a standard deviation of .61, and question 3, "my undergraduate education equipped me with effective communication skills" had a mean of 1.94 and a standard deviation of .63

Questions 2, 13, and 8 had the least amount of agreement and the lowest means, Question 2, "the Agricultural Technology Program offered me adequate job placement assistance," had a mean of 2.58 and a standard deviation of .96. Question 13, "the curriculum in Agricultural Technology does not permit enough elective courses in other areas," had a mean of 2.83 and a standard deviation of .96. And question 8 "I believe the computer experience provided by the Agricultural Technology Program was adequate for my career," drew the least agreement with standard deviation of 1.11. Complete findings of descriptive statistics are reported in Table 1.

Table 1

Evaluation of Agricultural Technology Education Experience

Question	N	Mean	Standard Deviation
My overall educational experience at Virginia Tech was worthwhile	215	1.55	.61
The Agricultural Technology Program should continue the internship requirement for every student.	215	1.35	.61
My undergraduate education equipped me with effective communication skills.	215	1.94	.63
I believe the lab sections helped my understanding of the course content in the Agricultural Technology Program.	214	1.42	.64
I felt comfortable talking to my advisor about course work and issues related to the program.	215	1.95	.71
The courses taught by the Agricultural Technology Program were out-of-date and lacked relevance.	214	3.97	.71
My advisor was available when I needed help.	215	1.75	.76
I consider my option area courses to be very important for my career success.	214	1.91	.81
My student involvement in extracurricular activities is helping me now.	214	2.51	.87
I feel that I was provided sufficient information concerning career opportunities in the field of agriculture.	215	2.26	.88
All things considered, I wish that I had not majored in Agricultural Technology.	215	4.14	.91
The Agricultural Technology Program offered me adequate job placement assistance.	209	2.58	.96
The curriculum in Agricultural Technology does not permit enough elective courses in other areas.	213	2.83	.96
I believe the computer experience provided by the Agricultural Technology Program was adequate for my career.	215	2.50	1.11

Note. Scale 1 through 5, 1=strongly agree, 2=agree, 3=no opinion, 4=disagree, and 5=strongly disagree

Research Question 2: What is the salary range of the graduate's first job after graduation and what is their present salary range?

The data received from Question 2 was coded from zero to 10. The mean, mode, and median discussed represent the numeric code used to interpret the data. The code was then translated from ordinal data to the actual numeric representation.

A subject(s) minimum gross salary for the first job after graduating the Agricultural Technology Program was in the \$10,000 to \$14,999 range for 30 of the 201 subjects that responded to the question. The Mean was a 3.27, which represents an average, gross salary range of \$18,000 to \$23,999 for 90 of the 201 respondents of the question, and a mode and median of 3 (\$18,000-\$20,999). There were three (1.5%) respondents making a gross salary of \$40,000 or higher on their first job after graduating from the program. Complete findings of descriptive statistics are reported in Table 2.

The current annual gross income question showed there were three subjects (1.5%) that currently have no income, this is due to either being a current student or being a "housewife" according to the data received. The minimum current gross salary for an Agricultural Technology graduate was in the \$10,000 to \$14,999 range for 10 (4.9%) of the 204 subjects that responded to the question. The mean was a 5.75, which represents an average, gross salary range of \$24,000 to \$29,999 for 63 of the 204 respondents of the question. There were 30 (14.7%) respondents making a current gross salary of \$40,000 or higher. The median current annual gross income is a 6 (\$27,000-\$29,999) and a mode of 5 representing \$24,000-\$26,999. Complete findings of descriptive statistics are reported in Table 3.

Table 2

Starting Gross Salaries of the Agricultural Technology's Graduates First Job (n=201)

Salary Range	Frequency	Percent	Cumulative Percent
No Income	0	0.0	0.0
\$10,000 - \$14,999	30	14.9	14.9
\$15,000 - \$17,999	40	19.9	34.8
\$18,000 - \$20,999	55	27.4	62.2
\$21,000 - \$23,999	35	17.4	79.6
\$24,000 - \$26,999	23	11.4	91.0
\$27,000 - \$29,999	12	6.0	97.0
\$30,000 - \$32,999	1	.5	97.5
\$33,000 - \$35,999	0	0	97.5
\$36,000 - \$39,999	2	1.0	98.5
\$40,000 +	3	1.5	100

Note. Mean=3.27 shows that the mean income is between \$18,000 and \$23,999, standard deviation=1.75. Mode=3 (\$18,000-\$20,999), and a median income of 3 (\$18,000-\$20,999).

Table 3

Current Gross Salaries of the Agricultural Technology's Graduates (n=204)

Salary Range	Frequency	Percent	Cumulative Percent
No Income	3	1.5	1.5
\$10,000 - \$14,999	10	4.9	6.4
\$15,000 - \$17,999	13	6.4	12.7
\$18,000 - \$20,999	19	9.3	22.1
\$21,000 - \$23,999	21	10.3	32.4
\$24,000 - \$26,999	34	16.7	49.0
\$27,000 - \$29,999	29	14.2	63.2
\$30,000 - \$32,999	20	9.8	73.0
\$33,000 - \$35,999	12	5.9	78.9
\$36,000 - \$39,999	13	6.4	85.3
\$40,000 +	30	14.7	100

Note. Mean=5.75, shows the mean income is between \$24,000 and \$29,999, standard deviation=2.73. median=6 (\$27,000-\$29,999), and a mode of 5 (\$24,000-\$26,999).

Research Question 3: What were the strengths and weaknesses of the program as perceived from the graduates?

Strengths and weakness of the program were determined from the first 14 questions on the survey instrument through the mean and standard deviation, and through survey instrument question 32 and 35. Questions 32 and 35 had similar responses with the addition of graduates calling for the Agricultural Technology Program to have alumni activities, a newsletter, and to ask the alumni of the program to get involved with the program. Tables 1 and 4 through 16 report frequencies and means when appropriate and are where the appropriate data is reported for the findings of to research question 3.

The top three questions that were rated with the highest agreement were: number 1, "my overall educational experience at Virginia Tech was worthwhile," was rated with a mean of 1.55 and a standard deviation of .61. Question 6, "the Agricultural Technology Program should continue the internship requirement for every student," had a mean of 1.35 and a standard deviation of .61, and question 3, "my undergraduate education equipped me with effective communication skills" had a mean of 1.94 and a standard deviation of .63

Questions 2, 13, and 8 with the least amount of agreement and the lowest positive mean, Question 2, "the Agricultural Technology Program offered me adequate job placement assistance," had a mean of 2.58 and a standard deviation of .96. Question 13, "the curriculum in Agricultural Technology does not permit enough elective courses in other areas," had a mean of 2.83 and a standard deviation of .96. And Question 8 "I believe the computer experience provided by the Agricultural Technology Program was adequate for my career," drew the least agreement with standard deviation of 1.11. Complete findings of descriptive statistics are reported in Table 1.

After careful examination of the subjects' statements in answer to question 32 of the survey instrument, the statements were deemed to fit in one of 14 categories. Some statements made were thrown out due to illegibility and, therefore, will not be shown in any of the tables. Some of the statements were able to fit into more than one of the categories, but were only categorized into one as the researcher deemed most appropriate. The categories are as follows: animal agriculture, agricultural business, computer and technology, communication and issues, more in-depth courses, turf, additional courses, crops, general curriculum, job placement and internship, new program options, separation of options, more stringent requirements, and general statements and no-opinion. Complete findings of descriptive statistics are reported in Tables 4 - 16.

Table 4

Subject Statements about Program Improvement to Curriculum: Animal Agriculture

Statement	Freq.
Additional animal health courses	3
Keep on the cutting edge in beef production and forage utilization	1
More in-depth beef cattle courses	1

Table 5

Subject Statements about Program Improvement to Curriculum: Agricultural Business

Statement	Freq.
Additional business courses	5
More emphasis in sales techniques, business management, bidding skills, and owning and operating a small farm	4
Require more business courses for all options	3
Less animal courses and more business courses would be more benefit	2
Don't just teach how to borrow money	1

Table 6

Subject Statements about Program Improvement to Curriculum: Computers and Technology

Statement	Freq.
Increased computer work, additional computer courses, and increased emphasis on computer applications	16
Stay current with technology and look at new technology	2

Table 7

Subject Statements about Program Improvement to Curriculum: Communication and Issues

Statement	Freq.
Increased emphasis on communication, public speaking, and public relations skills	4
Additional curriculum for people management and leadership	2
Emphasis on current agricultural practices	1

Table 8

Subject Statements about Program Improvement to Curriculum: Turf

Statement	Freq.
Improve and more hands-on irrigation and drainage course	8
More strictly turf courses, more speakers in turf	6
Separate the Landscape and Turf options	2
Offer a turf equipment mechanics and maintenance course	2
Additional golf course classes	1
Golf course construction courses required	1
Require diseases of turf grasses course	1
Additional landscape and turf courses	1
Both woody landscaping courses should be more available for every turf student	1
Improve nursery courses	1
Additional hands-on activities towards superintendent training	1
Include herbaceous plant material and landscape contracting	1

Table 9

Subject Statements about Program Improvement to Curriculum: Additional and More In-depth Courses

Statement	Freq.
More course options and a wider variety of courses for electives	14
More 4 year course options	10
Some courses are too vague and should be more in-depth to aid in the understanding of the field of study	5
Have basic courses that relate to the real world and less useless courses	2
Have in-depth training that can lead to licenses and certifications, i.e. crop advisors	1
Make the management courses more in-depth	1
Replace Ag. Tech course I and II with more specific courses so that students are able to choose what they want and need	1

Table 10

Subject Statements about Program Improvement to Curriculum: Crops

Statement	Freq.
More crop specific courses	1
Additional courses in nutrient management	1
More agricultural related courses	1
Use something other than corn to teach students how to raise plants	1
Teach some common growing practices such as, from pre-planting through harvest and post-harvest	1

Table 11

Subject Statements about Program Improvement to Curriculum: General Curriculum

Statement	Freq.
Get more or all credits and courses to transfer	27
More hands-on in classes and/or keep class size down	9
More in-depth soil chemistry courses as well as math, chemistry, turf science and computers	2
Teachers that speak English	2
Some courses should have a project at the end to tie everything together	1
Only require one animal management course	1
The program should put more time into classes, making sure that people understand the material	1
Make material more specific	1
Allow more basic college classes	1
Ag. Tech is a great idea and all options are good except the crop production option	1
Local farmers need to be brought into the classroom and internships	1
Make students understand that classes are important. Be tougher on the ones that did not participate or were disruptive, certain students made it difficult to concentrate.	1

Table 12

Subject Statements about Program Improvement to Curriculum: Job Placement and Internship

Statement	Freq.
Spend more time with people graduating to help them with job placement	2
Let students know that jobs obtained with a two-year degree are lower paying production or farm management jobs	1
Allow interns to work for family business	1
Review the many agriculture jobs available and the various positions in the field of agriculture and what the future holds for many of these options. More than just animal, business and turf.	1
Have job placement for agricultural technology students only	1
Become involved in placing or giving internships. Helping an intern work with a company that is related directly towards their degree	1

Table 13

Subject Statements about Program Improvement to Curriculum: New Program Options

Statement	Freq.
Add a forestry option	2
Add an equine option	1
Expand to more fields	1

Table 14

Subject Statements about Program Improvement to Curriculum: Separate Options

Statement	Freq.
Have complete separate courses for all of the options, do not intermingle the options	7
Have more specialized classes for each individual options	7

Table 15

Subject Statements about Program Improvement to Curriculum: More Stringent Requirements

Statement	Freq.
Make the courses tougher, more challenging, more difficult grading, and demand more from students	6
Make the graduating required GPA higher, students should improve	1
Crack down on cheating, its cheating the students	1

Table 16

Subject Statements about Program Improvement to Curriculum: General Statements and No-Opinion

Statement	Freq.
No-Opinion, no statement, not sure of present-day situation, and stay the same	19
Make it a four year program	2
Cut down on the paper work required for the internship	1
Have long and short essay exams, not multiple choice	1
More advertising of the program	1
we experienced bitterness from the instructors towards the two-year program	1
Professors who normally taught 4yr students thought we were less capable people/students	1
More university support	1
Bring back more alumni to talk with students about the real world	1
Have an internet site with updates of what is going on	1
Try to get more students involved in clubs and organizations	1
Do away with attendance classes such as intro to Ag Tech It makes the students feel immature and they then act immature	1
I seemed to learn a lot from the classes taught by extension agents	1
Some professors didn't seem interested in teaching us	1
More guest speakers from various agricultural fields	1
Most employers want 4-year degrees	1

Research Question 4: What is the Agricultural Technology graduates current occupations?

Once the data had been collected each response to survey instrument question 27, "what is your current primary position title?" was written on a file card and then separated into one of several categories. The categories are animal agriculture (Table 17), agricultural business (Table 18), crops and agronomy (Table 19), landscape and turf management (Table 20), miscellaneous agriculture (Table 21), production agriculture (Table 22), and miscellaneous occupations (Table 23). Each of the categories listed has several sub-categories. Complete category and subcategory listings and frequencies are reported in Tables 17 through 23.

Table 17

Agricultural Technology Program Graduates Current Occupations: Animal Agriculture

Occupation Category	Frequency
Herdsman	5
Herd Manager	4
Equine (Grooming)	2
Veterinary Technician	2
Artificial Insemination	1
Poultry service	1

Table 18

Agricultural Technology Program Graduates Current Occupations: Agricultural Business

Subcategory	Frequency
Managers, Assistant Managers and Trainees, Supervisors, and Department heads.	18
General Sales	10
Territory and Regional Sales Representatives, and consultants	8
Owners	7
Office Management, and Administrative Assistants	5
Accounting, Banking, Bookkeeping, and Finance	3
Customer Service, Human Resources, and Training	3
Directors and Coordinators	3

Table 19

Agricultural Technology Program Graduates Current Occupations: Crops and Agronomy

Subcategory	Frequency
Agronomy Specialist	1
Chemical Applicator	1
General Labor	1
Supervisor at an Experiment and Research Station	1
Technical Specialist	1

Table 20

Agricultural Technology Program Graduates Current Occupations: Landscape and TurfManagement

Sub-category	Frequency
Golf Course Assistant Superintendent	10
Golf Course Superintendent	6
Landscape Crew Foreman or Supervisor	4
Landscape Company Owner	3
Lawn-care	3
Irrigation Specialist and installation	2
Delivery/Fertilizer Spreader	1
Greens-keeper	1
Greenhouse Maintenance Foreman	1
Landscape Gardener	1
Landscape Groundskeeper	1
Propagation Manager	1

Table 21

Agricultural Technology Program Graduates Current Occupations: Miscellaneous Agriculture

Sub-category	Frequency
Environment, Conservation, Wildlife, and Health	6
Lumber and Paper Industry	3
Extension Agent	1

Table 22

Agricultural Technology Program Graduates Current Occupations: Production Agriculture

Sub-category	Frequency
Owner/Operator	16
Vice President, Managers, Assistant Managers, and Supervisors	14
General Farm Labor	2
Quality Control	1

Table 23

Agricultural Technology Program Graduates Current Occupations: Miscellaneous Occupations

Sub-Category	Frequency
Skilled Trades	6
General	5
Law Enforcement and Military	5
Student	4
Truck and Delivery Driver	4
Foreman	3
Managers and Supervisors	3
Unemployed and Homemaker	3
Engineer	2
Operator	2
Teaching	2
Technicians	2
Health Sciences	1

Research Question 5: What recommendations do the graduates have for the improvement of the Agricultural Technology Program?

After careful examination of the subjects' statements in answer to question 32 of the survey instrument, the statements were deemed to fit in one of 14 categories. Some statements made were thrown out due to illegibility and, therefore, will not be shown in any of the tables. Some of the statements are able to fit into more than one of the categories, but were only categorized into one as the researcher deemed most appropriate. The categories are as follows: animal agriculture, agricultural business, computer and technology, communication and issues, more in-depth courses, turf, additional courses, crops, general curriculum, job placement and internship, new program options, separation of options, more stringent requirements, and general statements and no-opinion. Complete findings of descriptive statistics are reported in Tables 4 - 16.

Chapter Summary

This chapter supplied a description of the examined data relevant to the four research questions received from the research questionnaire. A description of the population and sample, and the descriptions of the findings as dictated by the data received were also examined within chapter 3. Relevant frequencies, means, standard deviations, and percentages were described for some or all of the following: Likert-style judgement questions, graduates gross income for their first job following graduation, current gross income, current occupation, and statements made with regards to program improvement.

Chapter 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this chapter is to present a summary of the study. This chapter will review the purpose of the study, reiterate the research questions, research method used, the findings, conclusions of the study, and recommendations for further research.

Summary

Purpose of the Study

The purpose of this study was to perform an evaluation of performance of the Virginia Tech Agricultural Technology Program as perceived by the program graduates by collecting data regarding Virginia Tech Agricultural Technology Program graduates salaries', occupations, and recommendation statements for the improvement of the program. The population that was surveyed in the research is all of those that graduated from the Virginia Polytechnic Institute and State University Agricultural Technology Program between 1989 and fall 1998. This evaluation will allow faculty of the Agricultural Technology Program to better determine what changes need to take place within the program's curriculum to prepare students for the workforce in the agricultural industry.

Research Questions

1. How pleased were the graduates with the education they received through the Agricultural Technology Program?
2. What is the salary range of the graduate's first job after graduation and what is their current salary range?

3. What were the strengths and weaknesses of the program as perceived from the graduates?
4. What are the Agricultural Technology Program graduates current occupations?
5. What recommendations do the graduates have for the improvement of the Agricultural Technology Program?

Methodology

After an instrument was created and a pilot study conducted, the questionnaire was prepared for mailing with two follow-ups to increase the response. All three of the mailings yielded a total 215 received instruments for a 62% response rate from an N of 343. This left a total of 128 or 37% non-respondents. A reliability test was run in SPSS using the Cronbach Alpha method, also known as Alpha coefficient, Standardized Item Alpha = .7582. Once the raw data were compiled descriptive statistics, frequencies, and cross tabulation were used to analyze the data.

Findings

The first 14 items on the instrument were judgement questions regarding the graduates' overall experiences at Virginia Tech while enrolled in the Agricultural Technology Program. The first 14 questions on the instrument used a five point Likert-style; one being strongly agree, three no opinion, and five being strongly disagree with the statement provided. Questions 15 through 27 and question 29 asked selected demographic and personal characteristics of the subjects. Questions 28 and 30 through 35 contain five open-ended questions and two yes or no questions. Questions 28 and 30 through 35 asked for information pertaining to the subject's opinion, feelings, and recommendations for the Agricultural Technology Program.

The majority of the respondents were male (85.6%) between the ages of 20 and 29 (76.7%). The highest response came from the graduate class of 1989 (17.7%) with a close second from the 1998 class (14.9%). The response rate according to area of specialization and in descending orders was: Animal Agriculture (34.4%), Landscape and Turf Management (30.2%), Agribusiness (28.3%), and Crop Production (7.1%). The first 14 Likert-style judgement questions show a low variance and standard deviations below one with the exception of one question. The annual gross income for the graduates first job after graduating from the Agricultural Technology Program was \$18,000 - \$23,999. The current mean income of the respondents was \$24,000 - \$26,999.

Conclusions

Question 1: How pleased were the graduates with the education they received through the Agricultural Technology Program?

The findings of the first 14 questions of the survey instrument clearly illustrate positive mean scores with low standard deviations. This is concluded to show that the majority of the graduates were pleased with the education they received through the program and that the program prepared the majority of graduates for the agricultural industry. Two particular questions illustrate this best, "my overall educational experience at Virginia Tech was worthwhile," had a mean of 1.55 (strongly agree-agree) showed a high agreement with a standard deviation of .61. Question 14, "all things considered, I wish that I had not majored in Agricultural Technology," had a mean of 4.14 (disagree-strongly disagree), and a standard deviation of .91. The question was structured as a negative question and should show a high

mean score. The mean of 4.14 is a positive statement toward the Agricultural Technology Program.

Question 2: What is the salary range of the graduate's first job after graduation and what is their present salary range?

The graduates' gross salary for their first job after graduating from the Agricultural Technology Program showed 30 graduates with a low of \$10,000-\$14,999. The mode salary of 55 Agricultural Technology Program graduates was \$18,000-\$20,999, a mean and median first salary of \$18,000-\$23,999 for 90 graduates, and 3 graduates had a high annual salary above \$40,000.

The Agricultural Technology graduates' current gross salary consists of a low with no income due to being a student or homemaker (3 graduates). There were 34 program graduates that fell into the mode income level of \$24,000-\$26,999. The mean current salary of the Agricultural Technology Program graduates was \$24,000-\$29,999, 63 graduates fell into the mean. The median current income of the Agricultural Technology Program was \$27,000-\$29,999 that included 29 graduates, and 30 graduates with a high current income above \$40,000.

From the frequencies and descriptive statistics collected regarding program graduates salaries it is concluded that the salary range has moved up since their first job. Only three graduates had an income above \$40,000 for their first job after graduating the program while 30 graduates report their current income to be over \$40,000. The mean income rose from \$18,000-\$23,999 to \$24,000-\$29,999. The mode salary rose from \$18,000-\$20,999 to \$24,000-\$26,999, while the median rose from \$18,000-\$23,999 to \$27,000-\$29,999 for their reported current income.

Question 3: What were the strengths and weaknesses of the program as perceived from the graduates?

As with most results there are certain instances and/or subjects that show strengths as well as some shortfalls of the program. Without any doubt the findings show that there are a great deal of strengths to the Agricultural Technology Program. The availability of advisors and the students comfort level of talking to them about course work and issues related to the program had shown to be important to the respondents. The use of teaching labs in the course curriculum and the communication skills taught have proven to be an important part of a graduates' career success. The program graduates in almost unanimous agreement, believed that the mandatory internship that must be completed prior to graduation should be continued resulted in the lowest mean of 1.35 (strongly agree to agree) and a standard deviation of .61.

Every program has some points in which it should improve on, the Agricultural Technology Program is no different. From the graduates' perceptions the program is lacking in not having enough computer technology skills being taught. Question eight of the questionnaire, "I believe the computer experience provided by the Agricultural Technology Program was adequate for my career," had the least amount of agreement with a standard deviation of 1.11 and the highest variance (1.232). Among other weakness that the graduates pointed out included adequate job placement, the question "the Agricultural Technology Program offered me adequate job placement assistance" had a mean of 2.58 (agree to neutral) with a standard deviation of .96.

Question 4: What are the Agricultural Technology graduates current occupations?

The Agricultural Technology Program is meeting its mission by being able to have the majority of the program graduates employed in the agricultural industry (78%) with 16% having gone straight back work for the family farm or into farm ownership. The Agricultural Technology Program graduates have a higher rate of career-related employment than the Virginia Tech College of Arts and Sciences that was only at 72.9% as found in the 1997-1998 Post-Graduation Report (<http://www.career.vt.edu/FOLLOWUP/97-98/CARUNIV.html>, April 22, 2000). Four of the Agricultural Technology Program respondents are students and three are either unemployed or homemakers by choice, if these 7 are taken out of the equation 81.5% or 155 out of 190 total respondents are in occupations directly involved with the agricultural industry. There are 15 graduates in the animal agricultural field, 57 in the agricultural business industry, five in crops and agronomy, 34 in landscape and turf careers, 11 in the miscellaneous agricultural positions, 33 directly related in farming, and 42 of the graduates are employed in miscellaneous careers or trades. See Tables 17 through 23 for full occupation description and frequencies.

Question 5: What recommendations do the graduates have for the improvement of the Agricultural Technology Program?

There are many recommendations from the subjects that the program faculty should take into consideration with regards to curriculum and program management. Many themes were observed in the data received from the Agricultural Technology Program graduates including those regarding the transferability of course credit hours to the four-year program, use of computers and technology, additional program options, additional courses, and improvement

with job placement services. However, some of the recommendations may not be economically feasible for this program even though they would be of benefit. There were 16 statements of recommendation made about requiring more computer work and added computer courses to help prepare students for the workforce. There were a total of 26 recommendations for the addition of or further emphasis of courses, five recommendations for additional business courses, seven for communication and people management courses, and 14 for more courses being made available to be taken as electives. Recommendations to make four-year courses more readily available to the Agricultural Technology students were made by 10 subjects, eight subjects recommended for the improvement of the irrigation course, while nine recommended to keep class size to a minimum and make the courses more hands-on. There were 14 recommendations to specialize and separate each of the courses according to option. Eight subjects thought that there should be more stringent grading procedures, higher GPA requirements for graduation, and/or more challenging courses. An overwhelming 27 recommendations to allow more credit hours allowed to transferred to the four-year programs, and 19 subjects stated that they were either too far removed from the program to make any recommendations, for the program to stay the same or had no-opinion.

Recommendations

Based from the findings and conclusions of the study related to program graduate perceptions the following recommendations for further study to determine if policy needs to be changed in the areas of curriculum, job placement, and credit hour transferability.

A needs assessment and/or full evaluation of the program curriculum should be performed using leaders from the agricultural industry in the fields of agricultural business and

finance, landscape and turf management, animal agriculture, and crops and agronomy to aid in what the industry deems as necessary skills and knowledge for a prospective employee.

An external review, which contains members not from Virginia Tech but of industry members, extension agents, faculty of two-year agricultural programs from land-grant institutions, and curriculum and instruction specialists should be conducted. This will allow an unbiased review of the program stature and its curriculum while provide constructive criticism from peers and should provide a new insight to instruction delivery.

Twenty-seven recommendations from Agricultural Technology graduates about the transferability of credits shows a great concern from their behalf. Based on the great deal of concern shown by the program graduates a study should be initiated to look at the possibility for policy change to increase the amount of transferable credits from the two-year Agricultural Technology Program to the four-year programs.

It is recommended that the Agricultural Technology Program perform a needs assessment and an economic feasibility study to possibly extend program options and courses in forestry/wood science, natural resources, and equine science. The data that have been compiled in response to current graduate occupations (see Tables 17-23) and recommendations made from the program graduates (see Tables 4-16), showed the need for additional options and/or courses.

Based upon the data that has been received in response to question 8 of the survey instrument (see Table 1) and recommendations made from the program graduates (see Tables 4-16) it is recommended that the Agricultural Technology Program expand its computer and technology course offerings. Additional technology and advanced computer skills have become more predominant in the agricultural industry and the Agricultural Technology Program must prepare students to meet the growing demand of technologically skilled employees.

The last major recommendation is that the Agricultural Technology Program should continue to do what has been working well as perceived by the program graduates. The internship is an integral part of the educational style of the program, also, the hands-on lab courses being taught through the program have proven to be a great asset and should be continued, and the advisement of students and the conformability that was on behalf of the students while meeting with the advisor shows a worth of accomplishment and high standards should be kept when advising students.

Personal Observations and Discussion

Through the data received from the survey instrument the graduates have showed their displeasure with the amount or lack there of, of credit hours allowed to transfer to the four-year program at Virginia Tech. Throughout the program's short history more credit hours have accepted into the four-year program than at the conception of the Agricultural Technology program. At the present time not more than 28 credit hours are allowed to transfer to the four-year program. With this said, the Agricultural Technology Program is a terminal degree program offering an Associate of Agriculture degree at the completion of the program. This two-year program was not be used as a stepping-stone such as seen through community colleges, to a four-year program.

The Agricultural Technology Program requires that a two credit hour computer applications course be taken to meet graduation requirements. Many of the courses that are taken through the Program require some basic computer usage, including email, Internet, word-processing, and spreadsheet usage. From the data received, and experience from within the field this does not come innately close to meeting the technological and computer needs that will be

found in the majority of the agricultural industry. There needs to be further integration of technology, computer hardware and software utilized in most, if not all of the courses within the Agricultural Technology Program. Furthermore, additional courses in technology and computers should be offered within the Program. The Agricultural Technology Program would be providing a more profound service to the students through an advanced computer applications, precision agriculture, and general agricultural technology course offerings.

Many of the courses that are being taught and offered through the Agricultural Technology Program are being duplicated with courses from the four-year program. At the programs inception it was bargained between administrators and faculty that there would be complete separation of the two-year and the four-year program. This does not provide the students any benefit. The students would receive a more appropriate education if there would be an integration between courses that are taught in both of the programs, there is no common sense or feasible reason to have course duplication as is being done with courses such as the computer applications course, and courses in the Landscape Turf option of the program. This requires additional manpower, administrative work, and money. In addition, a faculty member would be able to offer additional courses to the students that are not already being taught by the four-year or two-year program if he or she did not have to duplicate a course already being offered through the four-year program. Some thought should be given by offering specified courses in the various College of Agriculture and Life Science departments to the Agricultural Technology students that can be taken along side of the four-year program students. Purdue University has a two-year program that is fully integrated within each individual collage of agriculture department.

Overall the Agricultural Technology Program at Virginia Tech. is fulfilling the mission it has set forth. It is performing a worthwhile service to the Commonwealth of Virginia and Virginia's agricultural industry.

Summary

Part of the mission of the Agricultural Technology Program "is to develop the human resources to fulfill technical and management level needs" (AT web site, 2/16/00). This mission is being fulfilled with over 78% of the respondents in technical and management field of agriculture and the majority of those respondents that fall into the "miscellaneous occupations" category are primarily in management and technical fields which brings the Agricultural Technology Program's accomplishment of mission close to 100%.

The second part of the Agricultural Technology mission is "the primary emphasis in the Program is the application of content learned in the classroom, to address the issues, problems, and trend in the agricultural industry" (AT web site, 2/16/00). This has been a main focus of the program but a great number of the recommendations received show that there could be improvement made with regards to additional courses added and the hands-on application of the content learned in the courses being taught. Again economic feasibility may play an important role in how these recommendations are carried out.

Overall, the careful examination of the data shows that the graduates of the program are satisfied with the education they received from the program, but have some concerns regarding the amount of courses that are made available to the students.

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Appendix A

1862 Land Grant Institutions with 2-Year Agricultural Programs, 1998 Fall Enrollments from the Food and Agricultural Education Information System (FAEIS) Report.

All data was received either from the Food and Agricultural Education Information System (FAEIS) Report (July 1999), the Technical Agriculture Association (TAA) Web site, or the stated Institution.

North Carolina State University	Agricultural Institute	Enrollment: 461
Organized:	1959	
University of Wisconsin	Farm and Industry Short Course	Enrollment: 126
Organized:	1885	
Michigan State University	Institute of Agricultural Technology	Enrollment: 386
Organized:	1894	
University of Maryland	Institute of Applied Agriculture	Enrollment: 87*
Organized:	1965	
University of Nebraska	Nebraska College of Technical Agriculture	Enrollment: 270*
Organized:	1912/1965	
University of Connecticut	Ratliff Hicks School of Agriculture	Enrollment: 64
Organized:	1941	
University of Massachusetts	Stockbridge School of Agriculture	Enrollment: 264
Organized:	1918	
Virginia Tech	Agricultural Technology	Enrollment: 123
Organized:	1987	

Ohio State (Wooster) Enrollment: 965

Organized: 1972

Purdue University Enrollment: 27

Organized: 1973

South Dakota State University Enrollment: 94

Organized: Unknown

Pennsylvania State University Enrollment: 137

Organized: Unknown

Maine-Orno Enrollment: 1

Organized: Unknown

Louisiana State University Enrollment: 213

Organized: Unknown

American Samoa Community College Enrollment: 13

Organized: Unknown

Utah State University Enrollment: 16

Organized: Unknown

University of New Hampshire Enrollment: 319

Organized: 1868

* Indicates that the enrollment data was obtained from the Technical Agriculture Association (TAA) Web site.

** Indicates that the data was received from somewhere other than the Technical Agriculture Association (TAA) Web site or the Food and Agricultural Education Information System (FAEIS) report.

Appendix B

1913 Yearbook, The Bugle.

Administration Notes



In 1907, President McBryde resigned to accept an honorary appointment on the Carnegie Foundation for the Advancement of Teaching.

The policy adopted in 1891, and the organization then given the College, have continued practically unchanged from that year to the present one.

ADMINISTRATION OF PRESIDENT BARRINGER

In June, 1907, Dr. Paul Brandon Barringer, a medical professor at the University of Virginia, and for several years Chairman of the Faculty of that institution, was elected president and entered upon his duties in September of that year. Many changes in the faculty were made during his term of office, and the four-year courses in General Science and Preparatory Veterinary Medicine were dropped, as well as the classes in history. The garden and canning and cider-making departments were abolished and the old dairy and the canning buildings were torn down. In the last year of his term of office the main shop building with the greater part of its contents was destroyed by fire. The department of Mining Engineering was established and a professor of Mining Engineering elected. New four-year courses in Mining Engineering, Agricultural Engineering, Chemical Engineering, and Applied Biology were organized, short winter courses for farmers were established and a small building erected for the department of Mining Engineering and a residence for the farm manager.

A number of concrete walks were laid down, improving materially the appearance of the grounds adjoining the main buildings. A new driveway was opened to the agricultural building and two or three concrete bridges erected. The Alumni gate at the town entrance to the grounds was built during this administration. For the session of 1910-11, ten units were required for admission, an advance made possible by the rapid establishment of high schools throughout the State and necessitated by similar action taken by many Southern Colleges. The catalogue for the session of 1912-13, the last of this administration, gave notice that fourteen units would be required in 1913-14.

During Doctor Barringer's term of office there was some decline in the number of students, the attendance falling to 471 at its close. Doctor Barringer resigned at the close of the session of 1912-13.

Virginia Polytechnic Institute

Agricultural and Mechanical College

DEGREE courses in General Science, Agriculture, Applied Biology, Horticulture, Agricultural Engineering, Preparatory Veterinary Medicine, Applied Chemistry, Chemical Engineering, Metallurgy and Metallography, Applied Geology, Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering. Fifty-three instructors, thoroughly equipped shops, laboratories and barns.

Entrance requirements fourteen units. Specified: in English, three units; in Mathematics, three units; in History, two units; Optional, six units. Steam heat and electric lights in the dormitories and buildings. Pure water, regularly tested by college bacteriologist, in all college buildings and in town. Library, 26,000 volumes. Farm of 800 acres. Military training under officer detailed by the U. S. Army.

Demonstration work for the State of Virginia administered from this institution.

Two-year short course in Agriculture, and Farmers' winter short course.

Total cost for session of nine months, including tuition and other fees, board, washing, uniforms, medical attendance, etc., \$316.75. Cost to Virginia students, \$256.75.

Alumni employment bureau administered from the Registrar's office.

The next session opens Wednesday, September 20, 1916.

Write to Registrar for catalogue.

J. D. Eggleston, *President*

BLACKSBURG, VA.

Appendix D

Letter from E. W. Carson to Dr. Gary Minish

VIRGINIA TECH

Office of University Provost 961-5153

MEMORANDUM

March 5, 1986
RECEIVED
MAR 03 1986

TO: Gary Minish
FROM: E. W. Carson *Enc*
SUBJECT: Two-Year Agriculture Program

COLLEGE OF AGRICULTURE
AND LIFE SCIENCES

I have noted with some concern that the first class for the two-year agriculture program is targeted for enrollment in the Fall of 1987. There are numerous issues which could or will affect the student systems area. We have not discussed any of these issues. Some of these are listed below. I thought this listing might be helpful in your planning. I have also included several areas which interact with the Student Systems but for which we are not directly responsible.

1. The AG admissions should be in a separate office from Undergraduate Admissions. A clone of our new system could be made available for use as needed by the AG program.
2. After students accept an offer, selected data elements are transferred to the student records system. This transfer of student records must be coordinated.
3. The University must prepare SCHEV and OCR admissions reports and enrollment reports. Who will prepare and coordinate these?
4. All academic records must be in the same system and all transcripts and grade records will be under the Registrar. All such academic records are official state records and subject to both state and AACRAO guidelines.
5. Will the application records and high school material be forwarded to the Registrar for all enrolled students, as is now the case for undergraduates?
6. Who will verify the data in the admissions and student records system? Self-verification?
7. How will the AG program courses be identified in the records system and on transcript?

Virginia Polytechnic Institute and State University

- All courses taught in the AG program and all faculty teaching efforts in this program will need to be identified as being under the AG program. This must be done in the University's computer records associated with students and timetables.
9. ☒ I assume there will be specific funding which will need to be associated with faculty efforts in this program.
 10. ☒ All AG courses will be excluded from BS/BA degrees and associated QCA calculations. How will this be done?
 11. ☒ What is to be the associate degree designation (official title)? *B.A.*
 12. ☒ Who will clear the students for their graduation?
 13. ☒ Who will design and order diplomas? *same as m.*
 14. ☒ Will this be from a separate budget? *MC*
 15. ☒ All AG courses must be entered into the University catalog data base for subsequent scheduling and transcript processing.
 16. ☒ All AG courses must be in the timetable data base for students to register for classes.
 17. ☒ Will a separate timetable of AG classes be printed?
 18. ☒ A separate catalog will be needed for the AG program.
 19. ☒ Will the AG students be permitted on-campus housing? *Y* This will affect available beds for freshmen and the retention of regular students.
 20. ☒ Will the special AG identification in the student systems affect student IDs and access to student events, sports, and student services? *Same as for other students*
 21. ☒ Since these students will form a closed population, we may assume that no scheduling priority is needed. *Correct*
 22. ☒ How will we exclude four-year students from two-year courses?
 23. ☒ Since the two-year students will not be required to meet competitive admissions standards, it is assumed that the two-year students will be excluded from enrolling in courses in the four-year programs. How will this be accomplished?
 24. ☒ In the absence of any guidance in the separation of student class levels, I have assumed that we will assign class level

- 05 to the first year AG students and a class level of 06 to the second year students. ✓
25. Students wishing to "transfer" to the four-year program must apply for admission as regular freshmen and meet competitive admissions standards. OK
26. All room scheduling, including the two-year AG courses, is assumed to be under one University scheduling system. OK
27. New HEGIS and REGIS codes must be assigned to the various sub-programs. These must be coordinated with IRPA office and placed throughout the appropriate University files and data bases.
28. Will the AG students be eligible for financial aid? What types of aid? It is assumed that all such financial aid processing must be administered by the current Scholarship and Financial Aid Office. Only this office is staffed to deal with state and federal regulations. YW
29. Student Accounts needs to be included in the planning so that their computer billing programs will properly interface with the student records. OK
30. The payroll programs may require modification so that the two-year AG students can be paid for hourly wages. The payroll system accesses the student system. OK
31. The Personnel/Payroll systems must adequately reflect the faculty funding so that the teaching loads and faculty efforts can be properly accounted.
32. How will the course registration process fit with that for regular students? I assume it will be the same process and at the same dates. *no change* *Edwin Schen*
33. Will there be any special grading system? I assume not.
34. What will constitute satisfactory academic progress? SAME
35. What happens if there is not satisfactory progress? SAME
36. Will the director of the AG program need the ability to block the students from registration? *yes*
37. I assume that the assigning of advisors, grade reporting, re-admits, billing, etc., will be much as they are for regular students. *yes* Note that we have special readmit processes for ALL returning students. If these are not properly handled, the students cannot enroll.

assume that readmits (after a term of non-enrollment, other than summer) will be processed by the AG admissions office.

39. Will the two-year program accept AP credits? Transfer credits? I assume so! How will this be entered into the system?

40. Will the two-year students be included in commencement programs?

41. Will the two-year associate degrees be listed in the degrees conferred and who will prepare? I assume this will be a normal function of the Registrar.

42. Are there unique features required for the transcripts to show participation in the two-year program?

Many of the items listed above simply cannot be implemented with our current Student Systems. Significant program and data base changes would be required in the current system. We are developing a new system which will be ready for Fall 1988. In staff time is devoted to trying to patch the current system to adequately handle the AG program in 1987, we will seriously risk not having the new system ready! The new system will be developed to work with the two-year program. However, we need your assistance and suggestions now so that we can adequately meet your needs.

pdg

cc: Jim Nichols

Appendix E

State Board for Community Colleges Resolution

Norman C. Scott, Chairman
Waldo G. Miles, Vice Chairman
Mr. Thomas R. Glass
Mr. C. Gerald Harris
Mr. Lester A. Hudson, Jr.
Mr. Daniel Jenkins
Mr. Melvin D. Law
Mr. Michael J. Quillen



Mr. Richard A. Starling
Mrs. Doriene M. Steever
Mr. E. Kendall Stock
Mr. Robert Austin Vinyas
Mr. W. Roland Walker
Mr. Francis T. West
Mr. Earle C. Williams
Dr. James H. Hinson, Jr.

STATE BOARD FOR COMMUNITY COLLEGES

JAMES MONROE BUILDING, 101 NORTH 14TH STREET, TELEPHONE AREA CODE 804/225-2117
MAILING ADDRESS: P.O. BOX 1558, RICHMOND, VIRGINIA 23212

RESOLUTION

WHEREAS, the Virginia Community College System was established to provide freshman and sophomore level courses leading to a baccalaureate and/or technical degree; and

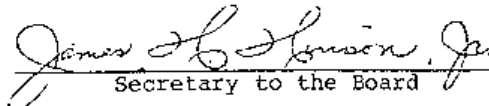
WHEREAS, the VCCS now operates twenty-three colleges located on thirty-three campuses throughout the Commonwealth of Virginia; and

WHEREAS, those various colleges and campuses are presently serving over 400 students in two-year agriculture programs; and

WHEREAS, Virginia Polytechnic Institute and State University has been planning a two-year agriculture program that would be duplicative in nature to the community college program and therefore an extra financial burden to the Commonwealth;

NOW, THEREFORE, be it resolved that the State Board for Community Colleges opposes the establishment of a two-year agriculture program at Virginia Polytechnic Institute and State University and believes that all such two-year programs should reside in the Virginia Community College System. Be it further resolved that the State Board for Community Colleges directs that a copy of this resolution be forwarded to the State Council of Higher Education and the Secretary of Education.

Adopted this 27th Day of May, 1982
Richmond, Virginia


Secretary to the Board

Appendix F

Instrument Cover Letter



Agricultural Technology

College of Agriculture and Life Sciences
1060 Linton Reeves Hall
Blacksburg, Virginia 24061-6334 USA
(540) 231-7649 Fax: (540) 231-6741

January 27, 1999

Dear Ag Tech Alumni:

This past year we celebrated the 10th Anniversary of the Agricultural Technology Program, graduating a class of 56. This now gives us a total of 384 graduates of the Program. You are a special part of a distinct group of graduates in that no other two-year agricultural program has been started in the U.S. since our Program began in 1987.

We continue to have a high interest in our Program and students are in great demand upon graduation. However since our Program was started, we have never conducted a thorough and comprehensive follow up of all of our graduates. Thus, this is the purpose of this mailing to you.

We would like to ask your cooperation and assistance in helping us to learn more about you since you graduated. Enclosed is a questionnaire we would like for you to complete and return in the preaddressed and postage paid envelop. All data collected will be confidential and all data reported will be summarized as a group response. The Code Number on the questionnaire is used only if a follow up is needed and will be discarded at the completion of the study. In anticipation of your willingness to cooperate and as a token of our appreciation, we have included a Virginia Tech magnet.

Your individual response is critical and we hope you take the 20 minutes to complete the questionnaire. **We look forward to your response and thus would like to have your form returned by February 15.** Again, thanks for your help and please let us know what you are doing.

Sincerely,

John R. Crunkilton
Associate Dean and Director

Enclosure

Appendix G

Survey Instrument

Agricultural Technology Alumni Questionnaire

Directions: Please read each of the following statements and circle the letter corresponding to your **FIRST** reaction concerning your opinion. As you answer each statement, try not to look back at previous items. Your opinion of each statement is important, since there are no "right" or "wrong" answers.

	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
1. My overall educational experience at Virginia Tech was worthwhile.	SA	A	NO	D	SD
2. The Agricultural Technology Program offered me adequate job placement assistance.	SA	A	NO	D	SD
3. My undergraduate education equipped me with effective communication skills.	SA	A	NO	D	SD
4. My advisor was available when I needed help.	SA	A	NO	D	SD
5. My student involvement in extracurricular activities (e.g., AT Club, Turf Club, etc.) is helping me now.	SA	A	NO	D	SD
6. The Agricultural Technology Program should continue the internship requirement for every student.	SA	A	NO	D	SD
7. I believe the lab sections helped my understanding of the course content in the Agricultural Technology Program.	SA	A	NO	D	SD
8. I believe the computer experience provided by the Agricultural Technology Program was adequate for my career.	SA	A	NO	D	SD
9. I consider my option area courses to be very important for my career success.	SA	A	NO	D	SD
10. I feel that I was provided sufficient information concerning career opportunities in the field of agriculture.	SA	A	NO	D	SD
11. The courses taught by the Agricultural Technology Program were out-of-date and lacked relevance.	SA	A	NO	D	SD
12. I felt comfortable talking to my advisor about course work and issues related to the program.	SA	A	NO	D	SD
13. The curriculum in Agricultural Technology does not permit enough elective courses in other areas.	SA	A	NO	D	SD
14. All things considered, I wish that I had not majored in Agricultural Technology.	SA	A	NO	D	SD

OVER

Directions: Please check the blanks and fill in the spaces as appropriate.

15. I am: ☐ male
☐ female
16. My age is: ☐ 20-24 ☐ 25-29 ☐ 30-34 ☐ 35-39 ☐ 40-44 ☐ 45-49 ☐ > 50
17. What were you doing immediately before entering the Agricultural Technology Program?
☐ high school ☐ working part/full time ☐ attending another college/university ☐ unemployed
other _____
18. The year of my graduation from the Agricultural Technology Program was 19____.
19. My specialization area in Agricultural Technology was:
☐ Animal Agriculture ☐ Agribusiness ☐ Crop Production ☐ Landscape & Turf Management
20. Please indicate the extracurricular activities or organizations you participated in while at Virginia Tech:(check all that apply)
☐ Ag Tech Club ☐ Turf Club ☐ Dairy Club ☐ Block and Bridle ☐ Alpha Zeta
☐ Gamma Sigma Delta ☐ Student Government ☐ Fraternity ☐ Sorority
Other: _____
21. Since graduating from the Agricultural Technology Program at Virginia Tech, have you enrolled in any other colleges? ☐ No ☐ Yes **If yes, please answer A, B & C.**
- A) Please indicate program and university attended _____
- B) Did any AT credits transfer ☐ No ☐ Yes If yes how many? _____
- C) Did you secure the B.S., M.S., and Ph.D. degrees? (please circle all that apply)
22. How long did it take you to obtain your first job after graduation from the Agricultural Technology Program?
☐ obtained job prior to leaving Virginia Tech ☐ less than 1 month ☐ 1 – 3 months ☐ 4 – 6 months
☐ 7 –12 months ☐ over 12 months
23. Was your first job after graduation from Virginia Tech with the same company you did your internship with?
☐ Yes ☐ No
24. What was the title of your first full-time job following graduation? _____
25. Was your first job related to your Agricultural Technology option? ☐ Yes ☐ No
26. My annual gross income for my first job after graduating from the Agricultural Technology Program was:

<input type="checkbox"/> \$10,000 – 14,999	<input type="checkbox"/> \$24,000 - 26,999	
<input type="checkbox"/> \$15,000 - 17,999	<input type="checkbox"/> \$27,000 – 29,999	<input type="checkbox"/> \$36,000 – 39,999
<input type="checkbox"/> \$18,001 - 20,999	<input type="checkbox"/> \$30,000 – 32,999	<input type="checkbox"/> \$ 40,000 +
<input type="checkbox"/> \$21,000 - 23,999	<input type="checkbox"/> \$33,000 – 35,999	

27. What is your current primary position title?

28. Has your Agricultural Technology degree helped you advance in your profession? ☐ Yes ☐ No

29. My current annual gross income is:

- | | |
|--|--|
| <input type="checkbox"/> \$10,000 – 14,999 | <input type="checkbox"/> \$27,000 – 29,999 |
| <input type="checkbox"/> \$15,000 – 17,999 | <input type="checkbox"/> \$30,000 – 32,999 |
| <input type="checkbox"/> \$18,001 – 20,999 | <input type="checkbox"/> \$33,000 – 35,999 |
| <input type="checkbox"/> \$21,000 – 23,999 | <input type="checkbox"/> \$36,000 – 39,999 |
| <input type="checkbox"/> \$24,000 – 26,999 | <input type="checkbox"/> \$ 40,000 + |

30. Which specific courses have been most helpful to you in your job?

31. Which Agricultural Technology courses do you now wish you had taken but did not?

32. How can the Agricultural Technology curriculum be improved?

33. How can the Agricultural Technology Program better serve you as an alumnus/alumna?

34. Would you recommend the Agricultural Technology program to a friend?

35. Are there any changes to the Agricultural Technology program that you would recommend to make the program productive for you?

VITA

ADAM J. KANTROVICH

Educational Background

Doctorate Degree

Institution

Major

Specialization

Cognate (minor)

Year Awarded

Ph.D.

Virginia Polytechnic Institute and State University

Vocational Technical Education

Agricultural Education

Agricultural Economics

2000

Master's of Science Degree

Institution

Major

Year Awarded

M.S.

Southern Illinois University at Carbondale

Agricultural Education

1997

Bachelor's of Science Degree

Institution

Major

Specialization

Year Awarded

B.S.

Southern Illinois University at Carbondale

Agricultural Education & Mechanization

Agricultural Information

1993

Experience

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY, BLACKSBURG, VIRGINIA
Graduate Assistant (Instructor of record).

SUBSTITUTE TEACHING K THROUGH 12, Jefferson County, Missouri and Columbia, Illinois.

SOUTHERN ILLINOIS UNIVERSITY, CARBONDALE, ILLINOIS
Teaching Assistant/Assistant Instructor.

COMPUTER WAREHOUSE, CARBONDALE, ILLINOIS
Business Manager.

Responsible for sales, marketing, purchasing, shipping and receiving, and various office management responsibilities.

KESSLER - ASHER CLEARING HOUSE (Chicago Mercantile Exchange, Commodities & Futures Market), CHICAGO, ILLINOIS
Out - Trader, Liaison.

Responsible for tracking trader's positions and accounts, out - trades, broker liaison and general office management.

United States Department of Agriculture (U.S.D.A.), Animal & Plant Health Inspection Service (APHIS), CHICAGO (O'HARE AIRPORT), ILLINOIS
Plant Protection and Quarantine Technician.

Responsible for clearing aircraft and passengers entering the United States.

Rainbow Ranch, SIOUX CITY, IOWA
Volunteer.

Aided in the teaching of mentally and physically challenged children to horseback riding. This was used as therapy for the children.

Golf Maine Park District, DES PLAINES/NILES, ILLINOIS
Camp Counselor.

Day camp counselor for children ages 8 through 13, duties included the creation and instruction of various arts & crafts, sport activities and other outdoor recreation activities. The duties varied dependent on the age group.

Courses Taught and Responsibilities

Virginia Polytechnic Institute and State University

Applications of Computers in Agriculture (Instructor of Record): Creation of course curriculum, instruction of labs & lectures.

Student Teacher Field Practicum (Team-taught): Instructed the technology skills necessary for students who will begin student teaching the following semester.

Independent Studies/Special Studies (advanced computer technology): Creation of curriculum, and instruction on an individual basis of advanced computer technology and web page design.

Internship Supervision: Responsible for the supervision of assigned students performing an Internship with the Agricultural Technology program. This included site visits and reviewing an internship report.

Swine Management (Instructor of Record): Creation of curriculum and instructional methods for the Agricultural Technology program. Instructor of Record

Web Based Application of Computers in Agriculture Course (Instructor of Record): Responsible for creation, proposal, curriculum, instruction, and web site design. Instructor of Record

Southern Illinois University

Individualized Learning Program, Computer Applications Course: Organized appropriate meeting times with students in this course for exams and help.

Land Surveying: Assisted in the lab portion of the course.

Microcomputer Applications in Agriculture: Organized material and curriculum, and taught lecture & labs.

Professional Presentations (communications/education course): Instruction of course.

Pedagogy for International Projects: Worked in conjunction with the Workforce Education Department with various international projects that include government officials and educators from countries such as Nepal and Indonesia. Some duties included the creation and instruction of structured courses, educational trips, and advising.

Agricultural Workshops: Assisted with workshops created to give elementary teachers exposure to the agricultural industry. I created and organized packets of information the teachers were able to take back to the classroom, and aided in educational field trips.

Scholarship

Proposals

Spring 1998, Maymester course proposal accepted to be funded by the provost office

Fall 1998 (accepted), Web based summer course proposal accepted to be funded by the provost during the May-June summer session 1999.

Unpublished Text

Ph.D. Dissertation: An Evaluation of Past Performance of the Two-Year Agricultural Technology Program at Virginia Tech. (in progress)

Master's Thesis: Needs Assessment for Agricultural Computer Training, pp.72, 1997.

Course Text: Applications of Computers in Agriculture, pp.107, 1996; Revised Dec. 1997, Revised Aug. 1998, Revised Dec. 1998.

Service

Contest Judging

Post-Secondary Agriculture Student (PAS) National Conference; Williamsburg, Virginia March 1998. Judged participant competition of formal interviews and resumes.

FFA, Virginia State Conference; Blacksburg, Virginia June 1998. Judged participants in the speech competition and the Group Agricultural Issues competition.

Facilitate Session

Southern Association of Agricultural Scientists, Southern Agricultural Education Research Conference; Memphis Tennessee, January 1999
Session B: Perceptions of Agricultural Education Program Students

Southern Association of Agricultural Scientists, Southern Agricultural Education Research Conference; Lexington Kentucky, January 2000
Session A: Learning Theory
Session G: Local Teacher Concerns

Organizations, Committees & Offices Held

Virginia Polytechnic Institute and State University

College of Agriculture and Life Sciences Computer Technology Advisory Committee, 1997 - June 1999

Southern Illinois University at Carbondale

Graduate Professional Student Council (GPSC) Member, 1994 - 1996; Graduate Professional Student Council Executive Board Member, 1994 - 1995; Elected President of Graduate Professional Student Council, Spring 1995; Fee Allocation Board, Constitutional Review Board, Safety and Parking Committee, Student Trustee Election Commissioner, Student Conduct Review Board, and Chair of the Mass Transit Advisory Board

Memberships in Professional Associations

- Alpha Tau Alpha - Professional Agricultural Education Fraternity.
- Association for Career and Technical Education
- Kappa Delta Pi - International honor society in Education.
- National Vocational Agriculture Teachers Association.
- Omicron Tau Theta - Vocational Technical Education professional organization.
- Virginia Vocational Agricultural Teacher Association