Factors related to the academic success of community college agricultural students who transfer to four-year institutions

Daniel Warren Brown

Iowa State University

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Factors related to the academic success of community college agricultural students who transfer to four-year institutions

Brown, Daniel Warren, Ph.D.
Iowa State University, 1994
Factors related to the academic success of community college agricultural students who transfer to four-year institutions

by

Daniel Warren Brown

A Dissertation Submitted to the Graduate Faculty in Partial Fulfillment of the Requirements for the Degree of DOCTOR OF PHILOSOPHY

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In Charge of Major Work

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For the Graduate College

Iowa State University
Ames, Iowa

1994
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>CHAPTER I. INTRODUCTION</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocational Educational Student Transfer</td>
<td>1</td>
</tr>
<tr>
<td>Need for the Study</td>
<td>3</td>
</tr>
<tr>
<td>Research Problem</td>
<td>5</td>
</tr>
<tr>
<td>Hypotheses to be Tested</td>
<td>10</td>
</tr>
<tr>
<td>Purpose of the Study</td>
<td>12</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>14</td>
</tr>
<tr>
<td>Assumptions</td>
<td>14</td>
</tr>
<tr>
<td>Limitations of the Study</td>
<td>17</td>
</tr>
<tr>
<td>Significance of the Study</td>
<td>17</td>
</tr>
</tbody>
</table>

| CHAPTER II. REVIEW OF LITERATURE | 18 |
| Introduction | 20 |
| Grade Point Average | 22 |
| Primary Source of Information and Assistance in Transferring | 28 |
| Vocational Credits Accepted for Transfer | 35 |
| Achievement of Baccalaureate Degree | 39 |
| Articulation | 44 |

| CHAPTER III. METHODOLOGY | 57 |
| Subjects | 58 |
| Instrumentation | 59 |
| Hypotheses to be Tested | 60 |
| Procedures | 62 |
LIST OF TABLES

Table 1. Iowa community college AAS agricultural graduates and transfers ................................. 6
Table 2. Persistence of natives and transfers as measured by degree earned ................................. 43
Table 3. Iowa AAS agricultural students 1985-1990 and those who transferred to four-year institutions by community college district ................................................................. 67
Table 4. Four-year institution selected and community college attended by Iowa AAS agricultural transfer students 1985-90 ................................................................. 71
Table 5. Number of Iowa AAS agricultural transfer students attending selected four-year institutions, and number and percentage attaining a Bachelor of Science (BS) degree from those institutions 1985-90 ................................................................. 81
Table 6. Dependent t-test between community college and four-year GPA for Iowa AAS agricultural transfer students 1985-90 ................................................................. 91
Table 7. Pearson correlation of vocational credits accepted and semesters enrolled by Iowa AAS agricultural transfer students 1985-90 ................................................................. 92
Table 8. Independent t-test of vocational credits accepted and achievement of BS degree by Iowa AAS agricultural transfer students 1985-90 ................................................................. 92
Table 9. One-way ANOVA of when decision was made and semesters enrolled by Iowa AAS agricultural transfer students 1985-90 ................................................................. 95
Table 10. Observed frequency table of time of Iowa AAS agricultural transfer student decision to transfer and the attainment of a bachelor's degree for those attaining AAS degree 1985-90 ................................................................. 97
Table 11. Chi-square of time of Iowa AAS agricultural transfer student decision to transfer and student persistence (semesters enrolled) 1985-90 ................................................................. 97
<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 12.</td>
<td>Chi-square of time of Iowa AAS agricultural transfer student decision to</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>transfer and the attainment of a bachelor's degree 1985-90</td>
<td></td>
</tr>
<tr>
<td>Table 13.</td>
<td>One-way ANOVA of time of Iowa AAS agricultural transfer student decision to</td>
<td>99</td>
</tr>
<tr>
<td></td>
<td>transfer and student GPA at the four-year institution 1985-90</td>
<td></td>
</tr>
<tr>
<td>Table 14.</td>
<td>Iowa community college AAS agricultural students by program and year of</td>
<td>154</td>
</tr>
<tr>
<td></td>
<td>graduation</td>
<td></td>
</tr>
<tr>
<td>Table 15.</td>
<td>Iowa community college AAS agricultural student graduates and transfers by</td>
<td>157</td>
</tr>
<tr>
<td></td>
<td>year of graduation</td>
<td></td>
</tr>
</tbody>
</table>
LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Statement of policy</td>
<td>4</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Iowa AAS agricultural transfer students 1985-90</td>
<td>69</td>
</tr>
<tr>
<td>Figure 3</td>
<td>The number of semesters attended to attain an AAS degree by Iowa agricultural transfer students in one of Iowa's community colleges graduating 1985-90</td>
<td>74</td>
</tr>
<tr>
<td>Figure 4</td>
<td>The number of semesters needed to attain a baccalaureate degree by Iowa agricultural transfer students while enrolled at a four-year institution who attained their AAS degree 1985-90</td>
<td>74</td>
</tr>
<tr>
<td>Figure 5</td>
<td>Goals of Iowa AAS agricultural transfer students 1985-90</td>
<td>75</td>
</tr>
<tr>
<td>Figure 6</td>
<td>Iowa AAS agricultural transfer students' 1985-90 four-year institution goal</td>
<td>76</td>
</tr>
<tr>
<td>Figure 7</td>
<td>Iowa AAS agricultural transfer student agricultural major at community college 1985-90</td>
<td>77</td>
</tr>
<tr>
<td>Figure 8</td>
<td>Iowa AAS agricultural transfer student academic major at four-year institution 1985-90</td>
<td>78</td>
</tr>
<tr>
<td>Figure 9</td>
<td>Status of Iowa AAS agricultural transfer students 1985-90</td>
<td>80</td>
</tr>
<tr>
<td>Figure 10</td>
<td>Current employment status of Iowa AAS agricultural transfer students 1985-90</td>
<td>83</td>
</tr>
<tr>
<td>Figure 11</td>
<td>Total credits accepted by four-year institution for Iowa AAS agricultural transfer students 1985-90</td>
<td>85</td>
</tr>
<tr>
<td>Figure 12</td>
<td>Total vocational credits accepted for transfer by four-year institutions for Iowa AAS agricultural transfer students 1985-90</td>
<td>86</td>
</tr>
<tr>
<td>Figure 13</td>
<td>Vocational credits accepted directly (course-for-course) for Iowa AAS agricultural transfer students 1985-90</td>
<td>86</td>
</tr>
</tbody>
</table>
Figure 14. Vocational credits accepted as electives by four-year institutions for Iowa AAS agricultural transfer students 1985-90

Figure 15. Total credits completed at four-year institutions by Iowa AAS agricultural transfer students 1985-90

Figure 16. Articulation agreements between Iowa community colleges and four-year institutions selected by Iowa AAS agricultural transfer students 1985-90

Figure 17. Community college grade point average for Iowa AAS agricultural transfer students 1985-90

Figure 18. Four-year institution grade point average for Iowa AAS agricultural transfer students 1985-90

Figure 19. When decision was made to transfer by Iowa AAS agricultural student transfers 1985-90
CHAPTER I. INTRODUCTION

In 1947 President Truman's Commission on Higher Education for American Democracy stated that the nation must break down its barriers to higher education (Vaughan, 1982). Much of the impetus for the expansion of vocational-technical education in the two-year college came from that President's Commission. The report recognized the expanded mission of the two-year college which had been called junior college since its early beginning. This expansion of the mission also led to the development of the community college as an institution.

The former junior college became a more comprehensive educational institution designed to serve the needs of a variety of learners. Educational opportunities for students were expanded from that of transferring to a four-year institution to include the vocational educational programs and adult education opportunities (Palinchak, 1973).

With the introduction of the vocational-technical educational curricula into the two-year college, not every course was designed for transfer to a four-year institution. A separate degree was even created for vocational educational students, the Associate of Applied Science degree (AAS) (Parnell, 1985). Prior to the expansion of two-year college's mission to a community college focus, the junior college awarded only the associate degree for successful completion of a two-year program of study. An area of emphasis in the arts or science was denoted by the Associate of Arts (AA) degree or the Associate of Science (AS) degree, respectively.
The vocational educational programs or "terminal study programs" as offered at the collegiate level in the two-year college were designed to teach job related skills more complicated than those taught in the high school (Cross, 1968). Many four-year institutions developed vocational technical preparatory programs during this time, most of which now have been moved to the two-year colleges and technical institutions. Vocational education became associated with the two-year college as the United States' need for trained employees grew (Littlefield, 1961). Technical knowledge, skills, and abilities were demanded in American industry and the potential employee needed a location where the hands-on experience could be learned. As originally conceived, students in these programs would terminate their formal education following graduation from their program. Scannell (1966) even suggested that a more acceptable term for the "terminal" programs of a vocational-technical-occupational-career-oriented education may be "non-transfer."

The transfer problems encountered by AS or AA community college students when transferring to four-year schools are well documented in the literature (see Review of Literature). Even though this literature focuses on the AA and AS students, and not the Associate of Applied Science (AAS) degree students, there may be parallels in the problems encountered when considering transfer. Research findings for AA and AS transfer students indicated slower progress at the transfer institution when compared to students who matriculated directly to the four-year institution (Echternacht, 1968). In addition, a drop in grade point average was reported at the transfer institution when compared to the
community college (Kissler, 1980), and lower persistence rates and
graduation rates were reported for students enrolling at the senior
institution directly out of high school (Anderson, 1977; Kissler, Lara, &

In Iowa, public "city or municipal colleges" offering a traditional
junior college curriculum have existed since 1918 (Lagomarcino, 1955).
The community college system was formalized statewide when public
supported two-year colleges in Iowa were created as the result of state
legislation by the Iowa General Assembly. In 1965 the Iowa Area Community
College District, Chapter 280.A Code of Iowa, subdivided the state into
not more than 16 merged areas with one public two-year college district in
each area. The purpose of Iowa's community colleges as outlined by law
was to provide educational opportunities and services in each of 11
educational areas. Vocational offerings were recognized as an important
part of the newly formed community college system. The second purpose
listed was "vocational and technical education" (Code of Iowa, 1965) (see
Figure 1).

Vocational Educational Student Transfer

Students in vocational educational programs have an educational goal
of immediate employability upon completion of their program in the
community college. Programs at Iowa community colleges were developed
under guidelines established by the Iowa Department of Public Instruction.
They were authorized based on job opportunities and economic conditions in
the district. However, no consideration was given to the transfer of
The mission and purpose of Iowa's community colleges is outlined in the Code of Iowa, Chapter 280A.1:

It is hereby declared to be the policy of the state of Iowa and the purpose of this chapter to provide for the establishment of not more than fifteen areas which shall include all of the area of the state and which may operate community colleges offering to the greatest extent possible, educational opportunities and services in each of the following, when applicable, but not necessarily limited to:

1. The first two years of college work including preprofessional education.
2. Vocation and technical training.
3. Programs for in-service training and retraining of workers.
4. Programs for high school completion for students of post-high school age.
5. Programs for all students of high school age who may best serve themselves by enrolling for vocational and technical training while also enrolled in a local high school, public or private.
6. Programs for students of high school age to provide advanced college placement courses not taught at a student's high school while the student is also enrolled in the high school.
7. Student personnel services.
8. Community services.
9. Vocational education for persons who have academic, socioeconomic, or other handicaps which prevent succeeding in regular vocational education programs.
10. Training, retraining, and all necessary preparation for productive employment of all citizens.
11. Vocational and technical training for persons who are not enrolled in a high school and who have not completed high school.

Figure 1. Statement of policy (Source: Iowa's Community Colleges: A Silver Anniversary Report, DE, 1992)

programs or courses for these students to four-year institutions. Diener (1986) documented that vocational education students do transfer to four-year colleges and universities. Lagomarcino noted in his unpublished dissertation in 1952 that vocational students were transferring to senior colleges and universities (Lagomarcino, 1955). Ratcliff (1989) made
reference to vocational education transfers in his publication, ASHE Reader on Community Colleges as did Cohen and Brawer in their book, The American Community College (1982). Ratcliff used a selection by Kintzer and Wattenburg (1985) which lists articulation agreements that specialize in vocational-technical credit transfer (p. 124). Chapter eight of Cohen and Brawer's book addresses the change from the terminal function of vocational programs to well-articulated programs serving both a terminal and a transfer population. The acknowledgment of the transfer vocational student population by Ratcliff (1989), Cohen and Brawer (1982), and Diener (1986) in their writings proves the existence of and provides a basis for the study of vocational students who transfer from two-year institutions to four-year institutions.

Need for the Study

Agriculture is one of vocational education's largest program areas (see Table 1). In Iowa's community colleges, the vocational educational students in agriculture are awarded the Associate of Applied Science (AAS) degree. Their primary interest is employment following the successful completion of their program. However, a significant number of agricultural students from Iowa's community colleges do transfer to four-year colleges and universities. In one community college, for example, 26% transferred to a four-year institution in 1988 (see Table 1). Those students who decided to transfer found that their vocational educational classes were not accepted for transfer by four-year institutions with few exceptions.
Table 1. Iowa community college AAS agricultural graduates and transfers

<table>
<thead>
<tr>
<th>Iowa community college and location</th>
<th>Total AAS-agricultural graduates 1985-1990</th>
<th>Total AAS transfers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area I NECC Calmar</td>
<td>149</td>
<td>9</td>
</tr>
<tr>
<td>Area II NIACC Mason City</td>
<td>82</td>
<td>8</td>
</tr>
<tr>
<td>Area III ILCC Emmetsburg</td>
<td>270</td>
<td>11</td>
</tr>
<tr>
<td>Area IV NICC Sheldon</td>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td>Area V ICCC Fort Dodge</td>
<td>55</td>
<td>0</td>
</tr>
<tr>
<td>Area VI ECC (IVCCD) Iowa Falls</td>
<td>315</td>
<td>54</td>
</tr>
<tr>
<td>Area VII HCC Waterloo</td>
<td>284</td>
<td>33</td>
</tr>
<tr>
<td>Area IX MCC Muscatine</td>
<td>53</td>
<td>14</td>
</tr>
<tr>
<td>Area X KCC Cedar Rapids</td>
<td>620</td>
<td>101</td>
</tr>
<tr>
<td>Area XI DMACC Ankeny</td>
<td>103</td>
<td>14</td>
</tr>
<tr>
<td>Area XII WITCC Sioux City</td>
<td>198</td>
<td>9</td>
</tr>
<tr>
<td>Area XIII IWCC Council Bluffs</td>
<td>66</td>
<td>2</td>
</tr>
<tr>
<td>Area XIV SWCC Creston</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>Area XV IHCC Ottumwa</td>
<td>56</td>
<td>0</td>
</tr>
<tr>
<td>Area XVI SECC W. Burlington</td>
<td>47</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td>2,362</td>
<td>254</td>
</tr>
</tbody>
</table>
One of the largest enrollment vocational programs in many community colleges is the AAS degree program in agriculture. The transfer of agriculture students from vocational educational programs to four-year colleges and universities has not been studied. Because vocational educational programs including those in agriculture were not created nor intended for transfer, no articulation studies pertaining to vocational educational programs in agriculture were found in the literature. With added emphasis upon advanced degrees, a larger number of students are adjusting their educational goals and seeking to transfer their vocational educational programs to four-year institutions (Parnell, 1985).

Associate of Applied Science (AAS) transfer studies are difficult to find in the literature. The Dissertation Abstracts International and ERIC resources from 1970 to present revealed no dissertations or theses on the topic of Associate of Applied Science (AAS) or vocational student transfer from community colleges. However, a number of related studies focusing on AA or AS transfer students are reviewed in the Review of Literature.

The Transfer Education Commission of the American Council on Education (1991) determined that there are three academic concerns with the traditional strategies commonly used to improve transfer. They are: 1) the interinstitutional transfer agreements (articulation agreements); 2) evaluating student educational aspirations (career option to liberal arts); and 3) student services and matriculation reform (transferring process).
Interinstitutional transfer agreements

Interinstitutional transfer agreements are referred to as one type of articulation agreements (see Review of Literature). These agreements outline the types of course credits that will be accepted by the four-year institutions from the community colleges. Formal articulation agreements attempt to address three transfer barriers that are built into the segmented system of American higher education (American Council on Education, 1991). One is institutional autonomy. The second issue concerning transfer addressed by articulation agreements is a lack of a standard credential for transfer from two-year to four-year schools (Knoell, 1990), and the third issue is the limited connection between the curricular of colleges.

Evaluating students' educational aspirations

Evaluating student academic aspirations is the second academic concern in transfer strategies. Knoell (1990) asserted that it is the school's responsibility to raise students' educational and career objectives. These students may possess poor academic backgrounds, have no focus in their curricula, no set sequence of courses with an established goal, and, in the case of vocational program students, have enrolled in a program for direct employment. It is not enough to merely provide transfer information, establish articulation agreements, and initiate the matriculation processes (Knoell, 1990). Students who are academically capable of completing higher degrees often enroll in programs leading to immediate employment due to the lack of networking or information
gathering skills (Nora & Rendon, 1988). The task of informing and motivating students to transfer will fall upon the faculty who have the most frequent contact with the students (Wechsler, 1989).

**Student services and matriculation reform**

The third academic concern is that of student services and matriculation reform or the process of transferability. Students who plan to transfer have little understanding of articulation agreements (American Council on Education, 1991). Without assistance with the transfer process few community college students have the knowledge or skills necessary to successfully negotiate the transfer process (Cohen & Brawer, 1987). Information on the transfer requirements as well as opportunities is often used to help students understand the requisites of the transfer process (American Council on Education, 1991). Matriculation reforms including entry testing and placement, tracking of student progress, enforcing standards of academic progress, and developing suggested programs of study have been successful (American Council on Education, 1991).

The three academic concerns for transfer--interinstitutional transfer agreements, evaluating student educational aspirations and student services, and matriculation reform--affect all community college students who plan to transfer. However, articulation agreements and the other strategies of transfer address primarily those in transfer programs. Little or no regard is given to the non-transfer, vocational-technical educational student (Lerner, 1987). Agreements in place for vocational educational students who decide to transfer are predominantly on a course-
by-course evaluation and institution-by-institution basis (see Review of Literature). How these students perform academically and the problems they encounter at the senior institution are not well documented in the literature. The determination of whether adequate information concerning transfer is provided, who is available for assistance for these students, when the decision is made for transfer, their purpose in transferring, and whether the problems they have are similar to other transfer students has not been studied. This study will address these topics and through descriptive and statistical analysis information assist a greater understanding of this population.

Research Problem

This research is designed to answer the question of whether AAS degree agricultural students transfer and, if so, are they successful academically. In addition, the questions of when did they decide to transfer from a non-transfer program and whether the timing of that decision had any effect upon their success in the four-year institution as measured by semesters enrolled and degree attainment were asked. For this AAS population, this study also asked to which institutions do they transfer and their academic status (grade point averages) in both the two-year and the four-year institution. Specifically, this will include: 1) determining when these students made the decision to transfer from a non-transfer program; 2) identifying problems encountered by transfer students with AAS degrees; 3) identifying the role of student services personnel and community college faculty in assisting this process; and
4) how many credits transfer and how they are assigned in the four-year institution.

Descriptive questions

In an attempt to study this problem, several questions were developed to determine the descriptive nature of the transfer student and factors related to a successful transfer experience. The questions were:

1. How many vocational students graduated in agriculture from Iowa's community colleges between 1985 and 1990 and of that number how many transferred to a four-year college or university?

2. At what point in his/her academic program did the student make a decision to transfer to a four-year degree institution?

3. What factors were important in a student's decision to select a particular community college and later a higher education institution?

4. Which four-year institutions matriculated the most Iowa AAS agricultural transfer students?

5. For each student, how many credits were accepted for transfer by the four-year institution? In particular:
   a. How many total credits were accepted?
   b. How many vocational credits were accepted on:
      (1) A direct course-for-course substitution?
      (2) A free elective acceptance?

6. What was the four-year academic major of community college AAS agricultural students?
7. What were the main obstacles AAS agricultural students encountered in senior institutions when transferring?

8. Who provided the primary transfer counseling to assist the AAS agricultural student in the transfer process?

9. Do formal articulation agreements exist between Iowa's community college agricultural programs and agricultural programs at selected four-year institutions?

10. What was the relationship between transfer grade point average for the student population and the four-year institution grade point average?

11. What was the number of vocational credits accepted for transfer in the four-year institution and the persistence and progress of the transfer student as measured by semesters enrolled and degree attainment, respectively?

12. What was the relationship, if any, in persistence (enrollment status), performance (grade point average), and progress (degree attainment) and when the decision to transfer was made?

Hypotheses to be Tested

Hypotheses that will be tested in this study relating to the performance, progress, problems, satisfaction, and degree achievement of Associate of Applied Science (AAS) graduates in agriculture from Iowa's community colleges between 1985 and 1990 who transferred to a four-year institution were as follows.
Hypothesis One

The better the grade point average prior to transfer by the AAS agricultural student, the better the grade point average in the four-year institution.

Hypothesis Two

The larger the number of vocational credits accepted by the four-year institution, the greater the likelihood of student persistence as measured by (a) semesters enrolled and (b) degree attainment.

Hypothesis Three

The earlier in the academic program that a decision was made by an AAS agricultural student to transfer, (a) the better the student persistence (semesters enrolled) in the four-year institution and (b) the greater the number attaining a bachelor's degree.

Hypothesis Four

The earlier in the academic program that a decision was made by an AAS agricultural student to transfer, the better the academic performance (grade point average) at the four-year institution.

Hypothesis Five

The satisfaction of the transfer counseling information received from faculty advisors and student services personnel from both the two-year and
the four-year institution as perceived by the AAS agricultural students was the same.

Purpose of the Study

The purpose of this research was to study Associate of Applied Science (AAS) students in agriculture who transferred following graduation from a public community college in Iowa. Even though the mission of vocational educational programs is for immediate job placement, this study was to determine the incidence of transfer with the AAS agricultural student population. In addition, transfer problems and the source of and satisfaction with transfer information and counseling was studied. The population was for those receiving their AAS degree 1985-90 to allow time for the completion of the bachelor's degree. The study identified when the student made the decision to transfer to the four-year institution. The relationship of that information to academic grade point average, semesters enrolled at the transfer institution, and the graduation rate was studied. Both statistical analysis and descriptive information were reported. A comparison of transfer rates over the six-year period was made to determine if a trend exists. These data could determine the emphasis for program curricula revision and assist in the counseling and the advising of AAS degree students in agriculture.

Definition of Terms

The operational use of several terms that are used throughout this study need to be defined.
**Associate of Arts (AA) degree:** The term "Associate of Arts degree" is used to refer to a degree awarded for successful completion of a two-year course of study with an emphasis on the arts at a two-year college. The intent of the degree is for the transfer of the credit to a four-year institution.

**Associate of Science (AS) degree:** The term "Associate of Science degree" is used to refer to a degree awarded for successful completion of a two-year course of study with an emphasis in science at a two-year college. The intent of the degree is for the transfer of the credit to a four-year institution.

**Associate of Applied Science (AAS) degree:** The term "Associate of Applied Science" is used to refer to a degree awarded for the successful completion of a two-year course of study in a vocational educational area at a two-year college. The degree is designed for students who seek employment upon completion of their program of study.

**Articulation:** The term "articulation" is used to refer to a systematic coordination of the course work and programs of students between educational institutions for students who wish to continue their formal education.

**Articulation agreement:** The term "articulation agreement" is used to refer to the method of coordination between educational institutions. Three styles are generally recognized. They are formal and legal policies, state-system policies, and voluntary agreements.

**Community college:** The term "community college" is used in this study to refer to those public educational institutions that provide
curricula which are restricted to the first two years of college work. That course work may or may not be recognized by a four-year bachelor degree granting college or university. This term is also used to indicate area school, area college, post-secondary institution, junior college, and vocational-technical institute even though there may be a technical difference in function among each. (It may provide general education, liberal arts, and/or vocational education.)

Matriculation: The term "matriculation" is used to refer to the process of applying, registering, and enrolling in an educational institution, particularly in terms of course acceptance and student academic status. In this study the term refers specifically to the AAS agricultural students who transferred to a four-year institution.

Performance: The term "performance" is used to refer to comparative grade point averages earned by respondents in this study (Richardson & Doucette, 1980).

Persistence: The term "persistence" is used to refer to the percentage of the original population still enrolled or having graduated during specified semesters (Richardson & Doucette, 1980).

Progress: The term "progress" is used to refer to the number of hours earned or semesters enrolled in a specified time by transfer students (Richardson & Doucette, 1980).

Transfer student: The term "transfer student" as used in this study refers to a two-year college student who matriculates to a senior college or university. It also includes Associate of Applied Science (AAS) students.
Two-year degree: The term "two-year degree" is used to refer to any of the three degrees awarded for successful completion of a two-year program of study at a two-year college. They include the Associate of Art (AA) and the Associate of Science (AS), degrees designed for transfer; and the Associate of Applied Science (AAS), a degree that is designed for students who seek employment upon completion of their program of study.

Vocational education or vocational-technical education: The term "vocational education or vocational-technical education" is used to identify those courses and programs whose intent is for specific, job related skills that would make one employable immediately upon completion of the program. The goal is not for transferability of course work into another educational institution.

Assumptions

A number of assumptions were made in this study. The assumption was made that the majority of AAS agricultural students who would transfer would do so immediately following graduation from the two-year college. Graduation requirements at Iowa’s community colleges for an AAS degree in an agricultural program were assumed to be similar. Likewise, the requirements for graduation at the four-year institutions studied were assumed to also be similar.

Limitations of the Study

This study was limited to the students who initially graduated in an agricultural program in Iowa’s area schools or community colleges during
the years 1985 through 1990 and who transferred to a four-year degree granting college or university. An additional limitation was that the agricultural program be vocational education in nature and not designed with the specific intent of transfer to another educational institution.

No attempt was made to evaluate the agricultural curricula or departments at Iowa's 15 community colleges and at the four-year institutions selected by the students in this study as transfer institutions. However, data contained in this study may be used by others as current information to examine the curricula of all institutions mentioned.

Significance of the Study

Agricultural students who transferred from vocational programs to four-year institutions are of concern to educators. The results of this study could lead to the formation of formal articulation agreements to facilitate the equitable transfer of credit between institutions for agricultural students in vocational educational programs.

The study would encourage better communication among the agricultural administrators and instructors within the community colleges of Iowa and with their counterparts in the four-year colleges and universities who accept those students.

The vocational educational students in agriculture at an Iowa community college would benefit the most from the information in this study if they desire to transfer.
In addition, by using the agricultural student transfers as an example, additional studies could be made for other areas of vocational-technical education concerning the transfer of community college credit. This study could also be expanded for use in other states.
CHAPTER II. REVIEW OF LITERATURE

Introduction

An extensive review of the literature relating to post-secondary students revealed a large amount of data regarding students who complete an Associate of Arts (AA) or an Associate of Science (AS) degree and transfer to a four-year college or university. Material was found in books, journals, ERIC documents, unpublished manuscripts, and dissertation abstracts. However, information is not easily accessible concerning the occupational, vocational, or terminal students who alter their career goals and decide to transfer with an Associate of Applied Science (AAS) degree. This study is with Associate of Applied Science (AAS) graduates from one discipline (agriculture) who graduated and transferred to a four-year institution. However, most of the literature concerns Associate of Arts (AA) and Associate of Science (AS) students. The definitions and characteristics of these groups are found in Chapter I. Cohen and Brawer (1982) state in the chapter, "The Collegiate Function of Community Colleges":

The question of how many community college students transfer appears simple, but the answer is that no one knows. There are not reliable, uniformly collected national data sets that can provide answers. The data are scanty even within states and within separate college and university systems. (p. 90)

What, when, where, why, and how Associate of Applied Science (AAS) degree community college students transfer is not widely researched. The qualitative questions of their perception of satisfaction and whether
their programs were a continuation of or a complement to their associate program need to be addressed.

The American Association of Community and Junior Colleges developed a policy statement on the associate degree (AACJC, 1984). They recommended that the Associate in Arts (AA) and Associate in Science (AS) degrees be used primarily to designate students prepared to transfer while the Associate in Applied Science (AAS) degree be used for students planning to enter an occupation. Many AAS degrees also designate special fields of study. But what happens to students who change their educational goal midway through a program or after completion of that applied science degree program? Do they need to repeat all courses or should a portion or all of their course work transfer to a four-year college or university?

Historically the mission of the two-year college was to provide the first two years of a liberal arts degree. The only degree offered was the associate of arts degree (Cox & Harden, 1989). In recent years, changes in the mission of the community college have brought changes in the transfer programs. The Associate of Applied Science (AAS) degree was originally designed as a terminal degree leading the recipient to immediate employment.

These study data collected included the student selection criteria and satisfaction with both the two-year and the four-year institutions they attended. Questions concerning when the decision was made to transfer, source and satisfaction with transfer information, and any difficulties in transferring were asked. The student grade point average at each institution was compared. Data were also collected about the
number of credits accepted for transfer, vocational credits accepted, semesters enrolled in the college or university, and whether a baccalaureate was earned. This chapter will review literature concerning grade point average, primary source of information and assistance in transferring, vocational credits accepted for transfer, achievement of baccalaureate degree, and articulation. Each area will be subdivided into studies on the Associate of Applied Science (AAS) degree followed by the Associate of Arts (AA) and the Associate of Science (AS) degree studies. Iowa studies are also under a separate heading.

Grade Point Average

Associate of Applied Science (AAS) degree studies

In 1987 Sayles compared the success as measured by grade point average and graduation rates of two groups of community college transfer students (general and occupational) and native students who were enrolled at The University of Michigan-Dearborn between 1975 and 1982. The results strengthen the case for believing that occupational education transfers in general perform academically in ways approximating those of other students. Age was found to be the factor affecting graduation rates more than educational program as found using the Multiple Classification Analysis.

Holliman (1988) compared the achievement between native students and transfer in the vocational field of home economics at Colorado State University. She examined total grade point average the final semester, persistence and grade point average in major classes. The academic
achievement of the community college transfer students across program majors was not significantly different from that of the native students. The final semester cumulative grade point average was not significantly different between the two groups. However, the transfer students had a higher persistence rate and a higher graduation rate than did the native students.

**Associate of Arts (AA) and Associate of Science (AS) studies**

Koos conducted several studies of junior college transfers in the early 1920s. Among them was a study of the performance of 95 associate degree students who transferred to the University of Minnesota (Koos, 1924). They were compared to 75 native counterparts. No statistically significant difference between the means of the two groups was reported by Koos (80.6% for the transfers and 79.8% for the natives).

Not all data reported were similar. Fichtenbaum (1941) stated that the native students' grade point average exceeded that of the approximately 900 junior college transfers to the University of Texas between 1935 and 1938. The difference in the junior year was greater than for the senior year.

Martorana and Williams' study (1954) concluded that there were no significant differences between the performance of transfer students and their native counterparts. They had studied 251 junior college transfers at the State College of Washington during the 1947 to 1949 period. In addition, transfers were found to exceed the natives in the subject areas of physical sciences and engineering. Klitzke (1961) reported the same
results. He had studied 231 community college transfer students at Colorado State University between 1953 and 1957. This study indicated no significant differences between transfer students' grade point average and that of native students.

In Hills' 1965 review of more than 20 community college transfer student studies, conflicting data regarding community college transfer student success were reported. Most studies reflected a post-transfer drop in grade point average. However, the drop was temporary and students recovered from the drop in 34 of the 38 studies. Of 33 studies reviewed, 22 indicated native students performed better, 7 indicated no difference in performance, and 4 indicated that the transfer students had higher grades than the natives.

Barriers to transfer were identified by Furniss and Martin (1974). They reported barriers as lack of agreement in the following areas: minimum grade point average, validity of credit for life experiences, core curricula, credit by examination, and compliance with state legal requirements.

Sloan's data (1979) show that the different grade point average of native and transfer students at Northern Illinois University (NIU) seems to disappear the longer the junior college transfer student remains at the institution. Transfer students in general took approximately one year longer to complete their studies at NIU. Richardson and Doucette (1980) reported that transfer students with similar high school rank as native students showed little or no difference when success was measured by grade point average. These findings support the hypothesis that differences
between students are due to variables other than attendance at a community college. Lau (1984) cautions that study results between two groups--transfers and natives--which attribute lower academic achievement to the community college experience are inaccurate. He states that the results are not valid because the two groups compared are not equivalent with respect to demographic data.

Burt (1985) studied the effect of Pell Grant awards on the academic performance of community college transfer students at Northern Illinois University. No statistical differences were reported for grade point average, number of credits earned, graduation rate, and persistence rate. The study did indicate that community college graduates had a higher grade point average, graduation rate, and persistence rate when compared to those who transferred to the university without the associate degree. This study also reported that more than one-half of the drop-outs occurred by the end of the first academic year and more students were academically dismissed from the university at the end of the second semester of enrollment than during any other semester.

Carter (1985) studied the academic performance of community college transfer students and four-year students for their graduation grade point average during the final semester in the four-year institution. In his five-year longitudinal study, transfer students actually outperformed the native students. Vaughan and Templin in 1987 reported that community college students with low academic qualifications transferred into a university and performed well compared to students starting at the university.
No significant difference in the grade point average achievement and persistence rates (graduation rate) of students who had earned the associate degree and students who had not earned the associate degree were reported by Cavanaugh (1987). However, students in the transfer track did show a greater persistence rate (63.2%) than those not in the track (36.8%).

**Iowa studies**

One early study of transfer students in Iowa was conducted by Lagomarcino (1955). He found that the major purpose of these institutions had been to provide parallel courses for those students who desired to remain at home and complete one or two years of a bachelor's degree curriculum. Lagomarcino's findings reported that as the grade point average went up so did the probability of graduation.

Casey (1963), Echternacht (1968), Langston (1971), Hildebrandt (1984), Giddings (1985), and Oswalt (1986) each studied Iowa community college transfer students. Their studies were of Associate of Arts (AA) or Associate of Science (AS) degree students.

Casey's (1963) results concluded that the grade point average at the community college served as the best predictor for forecasting achievement of a baccalaureate degree at one of the three public Iowa universities. He studied 1,088 junior college transfers who entered one of Iowa's three state universities between 1955 and 1959.

Echternacht (1968) used a single institutional approach in his study. Using the College of Agriculture and the College of Engineering,
Echternacht reported that transfers did not perform as well as native students when comparing grade point average. No difference was noted, however, in the grade point average of the natives as compared to the transfer students in the College of Science and Humanities or the College of Home Economics. Langston's (1971) research supported previous data that grade point average served as the best predictor of success.

The size of the community college for the transfer students and the specific college they entered was also compared in Echternacht's study (1968). Differences were found in grade point average in the College of Engineering and the College of Home Economics. Students transferring from larger community colleges earned a higher grade point average.

A recent (1993) study collected three years of data of Iowa community college transfer students who transferred to Iowa regent institutions. They found that the transfer grade point average was similar to native students at Iowa State University and at the University of Northern Iowa. One institution (Ellsworth Community College) had students who performed better than other Iowa community college transfer students, reporting a 3.11 grade point average as compared to 3.09 for native UNI students and 2.90 for all other community college transfers (Regents, 1993).

**Summary**

Many studies have been conducted concerning the grade point average of native and transfer students. In studies of Associate of Applied (AAS) degree students, Holliman (1988) found that the final semester cumulative grade point average was not significantly different between native and
community college transfer students. In studies of AA and AS students, Martorana and Williams (1954), Klitzke (1961), and Cavanaugh (1987) reported similar results. However, other researchers reported different data. Sloan (1979) found students had an initial drop in grade point average, but that difference seemed to disappear the longer the student remained at the four-year institution. Carter (1985) reported that transfers actually outperformed their native counterparts.

Different grade point averages as a result of the transfer institution or colleges within the university were reported by Echternacht (1968). Size of the community college was also determined to be a factor in grade point average (Echternacht, 1968). A three-year study (Regents, 1993) reported that the grade point average was similar for Iowa community college transfers and native students at two of the three public four-year institutions in Iowa.

Primary Source of Information and Assistance in Transferring

Associate of Applied Science (AAS) degree studies

Community college graduates with an AAS degree discovered that in many fields a baccalaureate degree was required for entry-level positions as well as career advancement (Cox & Harden, 1989). In examining the issues related to the transfer of community college students to the University of California, Villa (1981) found that there were assertions related to a decline in community college transfers to UC. A relationship was cited regarding vocational orientation of the community colleges and the vocational students' inadequate transfer preparation. This finding
noted the need to improve articulation for vocational students (California, 1982).

The need for strengthening the linkage between universities in Ohio and the programs administered under the State Division of Vocational and Career Education was studied in 1982 (Hamilton, 1982). The resulting 82-page document outlined the alternative delivery patterns and strategies, and pedagogical, technological, and informational update. The literature contains a large number of articles recognizing the transfer of Associate of Applied Science (AAS) degree students, but data on numbers are lacking.

Recognizing the potential among all community college students including the AAS recipients, the National Effective Transfer Consortium of 28 community colleges, based at the Foothill-De Anza Community College District, is evaluating the transfer process and working to improve transfer rates (Chronicle of Higher Education, 1992, p. 37).

In the 1970s, Baron (1984) found a dramatic shift from liberal arts to career education enrollment in the community colleges. He determined that factors for that shift included an infusion of federal funds, rapid growth of the student population, rapid technology growth, and a faltering economy resulting in unemployment and reduced educational benefits for four-year college graduates.

Cuyahoga Community College in Cleveland, Ohio studied transfer opportunities for the vocational areas of business, health careers among others (Ford Foundation, 1984). Although the study was designed specifically to study transfer of vocational courses for minority students, their findings were the same for all students. Findings
indicated four factors which contributed to low transfer rates. They were lack of articulation agreements specific to the transfer of particular courses for degree credit; lack of academic preparation for entering students; lack of personal preparation for post-secondary education; and lack of appropriate and adequate assessment of a student’s academic preparation and career choice as the basis for developing a sound counseling and advising program and individualized education plan (Ford Foundation, 1984).

Parnell (1985) said American society has too narrowly defined educational excellence as baccalaureate education. Echoing Cross (1968), Parnell envisions a totally new definition of excellence, one "that will hold meaning for all students" (Parnell, 1985, p. 10). He states that there are seven problems associated with the transfer of applied degree students. They are the issue of turf (protectionism), state leadership (unwilling or no jurisdiction), community college image, resources (both financial and personnel), scheduling (on both campuses), lack of communication, and a focus on the machinery rather than on action (Parnell, 1985, pp. 116-117). Parnell advocates a career education approach to education which helps students develop "competencies required to function in the real-life roles of learner, wage earner, citizen, consumer, family member, and individual" (Parnell, 1985, p. 65).

A comparison was made between transfer and occupational programs (Cohen & Brawer, 1987). Occupational programs are much more structured than are liberal arts programs. Courses are more restrictive, admission is selective, and each program typically has a lead faculty member (Cohen
& Brawer, 1987). If both were equally valued, associate degree programs and applied degree programs would be more proximate in terms of teaching load, requirements for student entry, enforcement of prerequisites, and academic support services.

Palmer (1987) surveyed 7,558 students from 95 randomly selected community colleges. He reported a sizable proportion of vocational students intended to transfer to a four-year institution. It cannot be viewed, therefore, that vocational educational programs are a curricular track for the less able students. It was also noted that because student intentions include transfer, vocational curricula must be developed within the context of student flow from high school to the baccalaureate (Palmer, 1987).

The self-concepts of selected groups of students who enrolled in liberal arts or vocational programs were studied by Rhodes (1988). It was found that no statistically significant differences existed among vocational-technical and academic students of the liberal arts college nor of the university.

Associate of Arts (AA) and Associate of Science (AS) degree studies

Four methods to assist transfer students were reported by Moore (1981). They included: 1) provide basic credit and course evaluation as quickly as possible; 2) provide separate, distinct opportunities for transfers to receive orientation to the institution; 3) make information clear and digestible; and 4) develop ways to connect with the transfer as a person.
Other studies suggest that community college students have done less well in high school academically, have lower aspirations for a baccalaureate degree coupled with a lower tolerance for extended years of study, and are more likely to be in college to prepare for direct employment (Cohen & Brawer, 1982). This last statement suggests a career and/or vocational intent in the community college function for at least some of the students who do transfer.

In 1983 Cuyahoga Community College (Cleveland, Ohio) initiated a project designed to improve the rates of persistence, retention, and success of minority students completing a two-year academic program and transferring to a four-year college (Cavanaugh, 1987). The four factors contributing to low rates of educational persistence and transfer were lack of: 1) articulation of particular courses for degree credit; 2) academic preparation; 3) personal preparation; and 4) appropriate and adequate assessment of a student’s academic preparation and career choice (sound academic and personal counseling).

Dallam (1984) presented the results, limitations, and policy recommendations from four studies over a 20-year period of Iowa’s three state universities. These are in regard to attendance patterns, achievement, and persistence of freshmen and transfer students. He found that no definitive statistical difference existed in the comparisons among the data.

In Kidd’s (1985) study of 150 transfer students in California, significant predictors of transfer included: 1) dissatisfaction with the frequency of use of counseling services; 2) the years of father’s
education; 3) dissatisfaction with college’s reputation; and 4) not living with a spouse. Existing campus resources found to be important were campus guidance services and classroom instruction.

A 1985 study by ERIC on "The Current Status of the Associate Degree" (California) suggested that several issues needed to be addressed in the future. They were the relatively low prestige of the degree, variations among colleges with respect to subject area and unit requirements, the need to keep technological advances in the vocational curricula, and the transferability of the degree.

Morris (1986) examined the nature of transfer-related problems and examined the differences among the students, the two-year personnel, and the four-year personnel in Connecticut. The findings were that significant differences existed in the areas of career counseling, transfer credit evaluation, academic advising, and financial aid information.

Dunford suggested that four-year colleges need to respond by reevaluating the transfer of community college courses. The study suggested that liberal arts curriculum is the best approach to basic skills instruction (Dunford, 1987).

In the chapter, "The Transfer Function," Cohen and Brawer (1987) discussed estimating transfer rates. One method stated was to check university students' transcripts for community college courses.

In states with well-articulated community colleges and public university systems, the community colleges provide significant proportions of the universities’ undergraduates; 42 percent of all undergraduates in Florida's public universities previously attended community colleges in that state. However, in states
where the community colleges serve a different function or where the universities have clung vigorously to their freshman enrollments, the proportion is much lower; only 17 percent of the undergraduates in the state universities in Kansas are transfers. (Cohen & Brawer, p. 93)

Owens' (1987) study reported that only in the area of policy and institutional support were differences noted between successful and unsuccessful colleges for transfer students. This suggests that the success of a transfer program is determined at the highest level.

Ford Foundation's Urban Community College Transfer Opportunities Project was designed to improve the process of transfer from community college to the four-year college for urban minority students (Donovan, 1987). Twenty-four colleges were involved in the effort. The Phillip Morris Foundation is revitalizing the dialogue on the transfer function (Pederson, 1992). Transfer is the original function of the expanded comprehensive mission for the community college. In their belief that more emphasis needs to be placed on the transfer of students and away from the emphasis of job training and economic development, grants over a three-year period will be awarded. Rural community colleges are also eligible, a major change from the Ford UCCTOP program. More importantly, all grant recipients are required to adopt a common definition of transfer (Pederson, 1992).

Stang (1989) conducted six black and Caucasian case studies regarding transfer policies and problems. Her findings concluded that students with similar economic and parental educational backgrounds transferred to similar kinds of institutions. She also found that specific institutional characteristics influence students' decisions to matriculate. The study
also suggests that institutional leadership and commitment must be taken into account when developing and implementing policies intended to assist transfer of specific target populations.

Richardson (1993) reported the next great advance in transfer will occur when faculty members from the two- and four-year colleges collaborate.

**Summary**

The literature contains studies about the transfer student and the success following transfer. Topics about inadequate transfer preparation (California, 1981; Ford Foundation, 1984) and differences in counseling (Morris, 1986) to the evaluation of courses (Dunford, 1987) were reported. The incidence of transfer has also been studied (Cohen & Brawer, 1987). They reported that the four-year institution's receptiveness to transfer is important to the number and success of transfer students. This was supported by Richardson (1993).

**Vocational Credits Accepted for Transfer**

**Associate of Applied Science (AAS) degree studies**

Eells studied the status of junior college terminal educational programs in 1940. In that year there were 610 educational institutions classified as junior colleges. As early as 1917 vocational programs were offered in junior colleges. These included agriculture and home economics. By 1940 fifteen junior colleges in eight states received federal vocational aid. In Iowa there were 25 junior colleges with a
student population of 2,335 that same year. Twenty-two percent of them were in terminal curricular programs (Eells, 1941). At that time no agricultural terminal programs were offered in Iowa. However, Eells reported finding 14 in the United States.

When public junior colleges with a narrow mission shifted to comprehensive community colleges, however, the added functions saw in many states a major increase of the number of total students enrolled in the two-year colleges. It also witnessed the beginning of a decline in the emphasis on the transfer curriculum. Those students enrolled in the vocational programs were not in a curriculum designed to prepare students to transfer (Kissler, 1981). Patterns in community college applications and enrollments changed markedly with more entering vocational programs in recent years (Hawaii, 1980).

For many vocational education students, the problem of locating an institution where their previous education was recognized was a major undertaking. The 1202 Commission found that vocational-occupational programs were not the beneficiaries of coordinated, synchronized education between various levels of education (Higher Ed Amendments, 1972).

The Minnesota Higher Education Coordinating Board examined credit transfer in 1979. Using a sample of 2,486 students, they found that only 56% of those who did transfer had expected to do so when they enrolled. They recommended the establishment of a uniform state transfer policy and a refinement in current procedures to increase student awareness of the transfer process. They included information for the Associate of Applied Science (AAS) student as well as those in a transfer track.
In 1979 the Southern Regional Education Board conducted a study of cooperative curricular planning between community colleges and senior institutions in technical and career oriented instruction. Over 50 types of programs in technical and career oriented fields were identified through which students might move from community colleges to senior institutions. Most were on the basis of "2 plus 2 years." It was noted, however, that for the most part courses taken at the state vocational schools had not been transferable. Inverted programs of technical students receiving their general education work at the university and of reverse transfer were more acceptable to most educational institutions studied.

The Minnesota Higher Education Coordinating Board gathered the statistics of student transfer activity for the higher educational institutions in the state for 1980-81 (Minnesota, 1982). Included in their findings was that vocational students (in terminal programs) accounted for 25% of all undergraduate transfers. The total number of transfers was 26,690 with 25% being 6,675 students.

At North Carolina University at Chapel Hill, the policies of senior colleges and universities concerning transfer students from two-year colleges in North Carolina were examined during the 1982-83 year (Joint Committee on Transfer Students, 1983). The special report included transfer agreements by program where vocational (non-transfer or terminal) students were categorized. They were compared on the topics of financial aid, admissions policy, transfer of credit, housing costs, course repetitions, grading policy, transferability of courses, general education
requirements, and transfer of credit by alternative means. Findings indicated that there were no statistically significant differences in the students between vocational programs (Joint Committee on Transfer Students, 1983).

A 1986 study by the California Community College Faculty Association recommended that all segments of post-secondary education in the state establish a transfer core curriculum that would ensure transfer to a four-year college or university in that state. Using the recommendation that at least 25% general education be required for all vocational programs, it was assumed that a minimum of those credits would transfer automatically without regard to program (California, 1986).

The National Education Association (NEA) (1992) joined in the call to address the transfer of vocational education from the community college. In The 1992 Almanac of Higher Education, an NEA document, the following is written:

Vocational educational programs are predominantly offered in the community colleges. These programs are primarily designed as terminal programs leading to the associate degree, certification or other vocational degree, for example, nursing or X-ray technician. NEA believes that greater attention, however, must be given to establishing programs to facilitate into baccalaureate programs at the four-year level, if they decide to seek this option. Such programs would require a more flexible curricula. (NEA Publications, pp. 144-145)

Watkins' (1990) article, "2-Year Institutions Under Pressure to Ease Transfers," in the Chronicle of Higher Education (February 7, 1990), stated that streamlining the transfer process is critical for educators who hope to increase achievement of minority group students in higher education, a group that makes up about 30% of community college
enrollment. Many of these students, however, are enrolled in vocational programs. AACJC estimates that two-thirds of the students when enrolling have no intention of transferring.

Summary

Eells (1941) studied vocational students and reported that in 1940 fifteen junior colleges in eight states received federal vocational aid. Over 50 types of programs in technical and career oriented fields were identified through which students might move from community colleges to senior institutions (Southern Regional Educational Board, 1979). Other studies addressed the transfer of AAS students to four-year institutions (Minnesota, 1982; Joint Committee on Transfer Students, 1983). They reported incidence of transfer (25% of all transfers) and issues of transfer (transfer of credit, general education requirements and others). Most vocational students (66%) have no intention of transferring to a four-year institution (Watkins, 1990).

Achievement of Baccalaureate Degree

Associate of Applied Science (AAS) degree studies

In the 1984 follow-up of Roxbury Community College graduates, only students receiving an Associate of Arts (AA) or an Associate of Science (AS) degree were used for transfer data. Their findings indicated that 38% of the vocational graduates did transfer and that 15% of the vocational students did receive a Bachelor of Science (BS) degree in two
years. The study also reported that an additional 49% were still actively pursuing a degree (McCartan, 1984).

Cox and Harden (1989) conducted a study at the University of West Florida exploring the success rate of Associate of Science (AS) and Associate of Applied Science (AAS) degree students attending the university. As early as the 1970s, AS and AAS degree students were admitted to the university. Using 86 transfer students with AS or AAS degrees, their findings indicated only 17 had graduated by the end of the fall 1985 term. However, by the summer of 1988, 48% had graduated as compared to 67% of the Associate of Arts (AA) degree transfer students. Of those AS and AAS students not graduating, 8% left because of academic suspension. However, this was comparable to all other students at the university.

An early researcher of junior college students was Eells. In 1943 Eells reported on 2,080 junior college transfers from 319 junior colleges who entered between 1934 and 1940. Eells’ results indicated that 56% had acquired the baccalaureate degree or were still enrolled. He found that 46% had grade point averages above the averages of all students in the institutions, 38% had the same as the overall average grade point, and only 16% were distinctly below the overall average.

A study to examine the performance of junior college students following transfer was completed in 1964 (Knoell & Medsker). This extensive study involved 10,000 students, 345 two-year institutions where
the students matriculated as freshmen, and the 43 four-year schools to which the students transferred. The students reported few serious problems at the senior institutions. Transfer students were satisfied with their junior college experiences. As measured by persistence and on-schedule degree completion, those students transferring at a junior standing were better than those transferring with less than a junior standing.

Deanda-Ramos (1987) examined the demographic and academic predictors of persistence in community college transfer students. This study found that academic variables were better predictors of persistence than demographic variables. Holliman (1988) found no significant difference between community college transfers across majors, that the cumulative grade point averages did not differ significantly, and that the persistence and thus the graduation rate was higher for the transfer students as compared to the native students in home economics programs at Colorado State University.

The importance of transfer courses lends itself to attitude and persistence through the degree attainment of the bachelor’s. In a study by House (1989), students who had a junior status upon transfer showed higher graduation rates, higher grade point averages, and lower dismissal rates than students who were native to that institution. Thus the persistence of two years marks heavily upon graduation and needs to be addressed as much as other factors (House, 1989).
Iowa studies

Giddings (1985) examined the performance, progress, and degree achievement of Iowa public community college transfer students at the three Iowa state universities. He compared performance measured by upper-division grade point average. Giddings reported that transfers performed similarly regardless of the community college where they received their initial education. He examined their progress as measured by the number of semesters enrolled and the number of upper-division credits earned. Persistence was measured by the rate of graduation. Students from each of Iowa's community colleges were found to have similar post-transfer success. The results showed that transfers with 60 semester hours earned prior to transfer performed better than other community college transfers.

Oswalt (1986) studied the degree attainment of native students as compared to transfer students. He included in his study students native to the college, transfer students from an Iowa community college, transfer students from selected community colleges outside Iowa, and student transfers from other four-year colleges. His data indicated that no statistical differences were found among the native and transfer students from each of the transfer institutions as measured by the total semester hours applied toward the degree.

The persistence of natives and transfers as measured by degree earned was reported at the three Iowa state regent universities (Wielenga et al., 1982). Students who entered in 1975 were followed through 1982. The results were:
Table 2. Persistence of natives and transfers as measured by degree earned

<table>
<thead>
<tr>
<th></th>
<th>Completed Degree</th>
<th>Still Enrolled</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Native</td>
<td>Transfer</td>
</tr>
<tr>
<td>ISU</td>
<td>57%</td>
<td>57%</td>
</tr>
<tr>
<td>U of I</td>
<td>48%</td>
<td>54%</td>
</tr>
<tr>
<td>UNI</td>
<td>41%</td>
<td>57%</td>
</tr>
</tbody>
</table>

The results indicate that the differences among the three regent institutions in Iowa were similar for Iowa State and the University of Iowa. However, the University of Northern Iowa data are significantly different between the native and transfers for both the degree completed and the still enrolled groups.

Summary

The attainment of the bachelor's degree by AAS students was studied by Cox and Harden (1989). In a study combining the AS and AAS students, they reported 48% achieved a Bachelor of Science (BS) degree. However, the AA degree transfer students reported a 67% graduation rate. House (1989) reported better persistence and degree completion of transfer students entering with a junior status. Giddings (1985) reported that transfers performed similarly regardless of the community college where they received their initial education. The results reported by Wielenga (1982) indicate that the differences among the three regent institutions in Iowa were similar for Iowa State University and the University of Iowa for degree completion. However, the University of Northern Iowa data are
significantly different between the natives and transfers for both the
degree completed and the still enrolled groups.

Articulation

Associate of Applied Science (AAS) degree studies

Articulation as a topic has been discussed in educational circles as long as educational institutions have addressed the transition for students moving among the various levels of education to different institutions (Kintzer, 1976). Articulation as defined by Cohen and Brawer (1987) is the movement of the student and the student's academic credit from one school to another (p. 167). William Rainey Harper's concept was to design a close relationship between the junior colleges and four-year colleges and universities (Higbee, 1973). Improvements in the technology and practice of articulation and transfer since 1985 have been significant (Richardson, 1993). However, education has not yet created "one system" as advocated by Hodgkinson (1985).

The concept of articulation is one of the most important ideas that higher education in the United States has contributed to other countries (Richardson, 1993). Articulation as a process became widely debated in the 1960s as more junior colleges became community colleges and expanded their mission particularly with vocational programs. This concern came from the four-year colleges and universities who were concerned with the Associate of Applied Science (AAS) degree students and their limiting their opportunity for transfer (Kissler, 1981).
Ernst (1978) defined articulation as a systemic coordination between an educational institution and other educational institutions and agencies designed to ensure the efficient and effective movement of students among those institutions and agencies, while guaranteeing the students' continuous advancement in learning.

There are three requirements noted by Ernst (1978) for articulation: 1) the student's prior and subsequent courses of study; 2) the student's understanding of the procedures and practices of the new environment; and 3) the student's financial needs. Studies regarding the transfer of vocational credits from the two-year college to four-year institutions were not of concern for research until recently. Only three studies conducted prior to 1980 were found.

Bender (1974) reported in the American Association of Community and Junior College Journal that the articulation of occupational students into higher education was overlooked and should be addressed. Since that time attention has been given to the articulation of occupational, vocational, or those often called non-transfer students from the two-year colleges.

Bushnell's article, "Articulating Vocational Education at the Post-secondary Level," describes a variety of programs designed to assist student transitions vertically (and horizontally) from one program level to another (Bushnell, 1979). His work focused on home economics, agriculture, and nursing programs.

Walsh (1978) also studied the articulation problems of vo-tech students. His findings indicated that generally occupational courses were
not accepted by four-year colleges. Those few courses that were accepted served only as free electives and were limited in number.

In 1983 the National Association of State Universities and Land Grant Colleges published a report recognizing the associate degree as a preferred transfer credential and increasing use of course articulation numbering systems, transfer centers, common academic calendars, and feedback on student performance (Rudick, 1983).

Knight (1983) reported that articulation between educational institutions should ideally specify exit-level competencies for student passage from one educational level to another. This would avoid course repetition and facilitate course acceptance. Knight conducted two case studies in Florida to determine the effectiveness of vocational curriculum articulation. Her findings were that a picture of distrust, competition, and an equal lack of cooperation existed. To enhance vocational curriculum articulation will require cooperation among administrators, involvement of college personnel in decision making, and clearer lines of responsibility among state agencies.

Along with traditional liberal arts students, students in occupational programs want four-year institutions to accept their credits toward baccalaureate degrees (Watkins, 1990). His findings indicated that most students enrolling in the two-year institution have no intention of transferring.

In Missouri (1984) a study was conducted to examine the potential for articulating students among Missouri institutions that offer vocational-technical education. A model was created that includes five strategies:
1) establish articulation of vocational programs as a high institution priority; 2) establish a joint advisory committee to facilitate coordination; 3) obtain state support for participation in articulation; 4) provide in-service training; and 5) develop formal articulation agreements (State Fair, 1984).

Previous studies of vocational course articulation concluded that most courses were not accepted by four-year institutions and those that were qualified as free electives only (Walsh, 1978; State Fair, 1984). However, at Southern Illinois University (Carbondale), the Associate of Applied Science (AAS) degree student is automatically accepted as a major concentration for the Bachelor of Science (BA) program in their School of Technical Careers (Southern Illinois University, 1988). An individualized program-to-program approach is used with no need to discuss course equivalence or other common articulation issues. A similar solution is found at Northwest Missouri State University where the AAS graduate enters as a junior with a statement that he/she could graduate in four semesters of further education (Northwest Missouri Transfer, 1991).

Lindeman (1984) studied state concerns in the future development of vocational education. Her results included the need for better articulation. "Across the nation, leadership must emerge and educators must be willing to tackle the difficult issues and plan for the future. The system of education must change; the nation's future depends upon it" (p. 23).

California (Robertson-Smith, 1988) studied articulating career education programs from high school through the community college to the
baccalaureate degree in their and 11 other states. Articulation between the two-year and four-year institutions was described. They proposed the development of state standards for vocational courses for college credit from the high school and establishing a computerized clearinghouse for information about articulated career education programs. Specialized accreditation in post-secondary education is designed to help maintain program quality (Robertson-Smith, 1988). In the vocational area of business, one agency, the American Assembly of Collegiate Schools of Business (AACSB), has been criticized for impeding rather than effecting smooth transfer of credit from two-year to four-year programs. Some articulation at the local level is working, but the overall community college concern is that community college transfer students typically lose a year or more of college work when they decide to pursue a baccalaureate degree because of AACSB's position. Their position is that business programs should concentrate their professional courses in the last two years of a four-year program. The program is compounded in that many students "back into" higher education by taking courses to improve their job skills, receive an associate degree, and then decide to pursue a baccalaureate degree. Virtually none of their technical credits will transfer and they must retake similar courses to earn the bachelor's degree (Savage, 1986).

In Texas, articulation of vocational education was a top priority in 1985. Statewide in-service training meetings were held on the topic of articulation of vocational education. The workshops included information
on the planning, administering, implementing, and tracking data flow at the local, state, regional, and national levels (Davis, 1985).

**Associate of Arts (AA) and Associate of Science (AS) studies**

Bender (1976) stated that the forces damaging to constructive relationships (between two-year colleges and four-year institutions) include articulation whereby two-year graduates are not given appropriate recognition of credit upon transfer.

Kintzer (1971) reported that doing a better job of advising students and dispensing information related to transfer courses and expectations will add to transfer success. His conclusions were based on his previous experiences and research in this area.

Florida pioneered efforts to develop a model articulation agreement (Parker & Gollattscheck, 1979). They reported in 1973 that 66% of the graduating seniors at Florida's state universities had attended a Florida community college. Florida's system of articulation was praised for its development of a statewide course numbering system (Zeldman, 1982). Equivalent courses regardless of the institution teaching the course were automatically accepted for transfer without debate. Following the Florida plan, Illinois developed articulation practices using an Articulation Council (Darnes, 1971).

In Texas a different approach was utilized in an attempt to develop an articulation solution. A general core curriculum was adopted by the Texas State Coordinating Board for Colleges and Universities. The board
has the power to review transfer credit and even to commission committees to examine particular transfer problems (McCrary, 1985).

Much of the articulation issue has been accomplished between the secondary and community college. These have been adopted and used as a basis of articulation agreements between the community college and the four-year institution.

Kintzer (1989) studied articulation between the two- and four-year colleges. He identified four types of transfer articulation agreements in current use. They are: 1) mandates for articulation of students by state constitution or legislation; 2) policies in states where all higher educational institutions operate under a sole governing board; 3) agreements or voluntary interinstitutional policies between specific institutions for all course work or for only a particular segment of the curricula; and 4) matriculation of individual courses on a student-by-student evaluation by the four-year institution.

In a 1982 Nevada University System publication, Section 3 addressed the conditions under which students with AS degrees may be admitted to senior institutions (Nevada, 1982). These require detailed evaluation of a program or all of an institution's course work. After this effort, Kintzer cautioned that it may result in only a small percentage of the students being interested in the transfer progress.

In California 69% of the community colleges have a formal articulation agreement with four-year institutions (California, 1982). California's Transfer Center Pilot Program (TCPF) was created in 1985 to further intersegmental efforts to stimulate the number and percent of
community college students who transfer to four-year institutions (California, 1986). It has centers on each of 20 community college campuses, 14 state universities, 9 University of California campuses, and 12 independent universities.

With their concern about the absence of articulation agreements, the Ford Foundation became involved in transfer as a priority in the 1980s (Richardson, 1993). Little evidence of formal relationships between institutions was reported.

Kintzer's (1989) third type of articulation agreement was primarily concerned with vocational-technical education. The important finding was that since articulation agreements do exist between institutions concerning vocational-technical education, it was correct to assume that vocational-technical students do transfer and in large enough populations to be of concern by instructors and administrators. Kintzer stated that his study indicated that this population was of a growing concern to educators at all levels.

Problems persist in articulation of community college students with four-year institutions for Associate of Science (AS), Associate of Arts (AA), and the Associate of Applied Science (AAS) transfers. Malek (1983) found that the Illinois public four-year schools were concerned about the quality of instruction and the caliber of students transferring from the Illinois community colleges.

In studying the articulation in Ohio (1987), Naylor reported major barriers to articulation. They included faculty reluctance, communication breakdown, lack of enthusiasm, inability to sell the concept at the top
level, leadership, staff elitism, and a reluctance to change curriculum. Naylor suggested that in-service and pre-service education was one possible solution to these articulation barriers.

A NASPA Journal article discussed transfer students, their problems and expectations, and the reason why half never complete the baccalaureate degree (Moore, 1981). She suggested that transfer programs emphasize clear information, speedy processing, separate orientation, and communication with two-year colleges. However, Moore's findings were that this is done very infrequently.

Monroe Community College formalized a 2 Plus 2 Cooperative Degree Program agreement (Degus, 1987). Degus reported that it ensures full transfer of associate degree course work toward the four-year degree. As part of the agreement, students pay one application fee, receive concurrent acceptance to both institutions, and are guaranteed admission to the higher program with junior status with degree and grade requirements specifically defined. The agreement is updated annually.

A computer-based system of articulation was developed by Miami-Dade Community College in Florida to monitor students' progress as they proceeded through the various degree programs (Schinoff & Kelly, 1982). The Advisement and Graduation Information System was designed to inform students of the specific courses required and/or suggested for a particular program in a specific university within Florida.

As recently as 1991, the Commission of the American Council on Education's National Center for Academic Achievement and Transfer (NCAAT), stated that the most pressing issue pertaining to transfer is a lack of a
standard rate definition. This will hamper efforts to collect data on transfers and hold colleges accountable, critics charge. Judith Eaton, director of NCAAT, stated, "The commission did not debate the transfer rate issue because members agree the issue needs more study" (Eaton, 1992, p. 7).

Many studies have attempted to define the current issues of articulation in the transfer of students between different levels of institutions. Research has also been conducted on remedies to those transfer issues. Astin's research (1983) suggests that a major effort needs to be made on pre-transfer activities. Evidence indicated that transfer students actually have a better chance of receiving a baccalaureate degree than do native students in the same college.

In studying the articulation of clinical laboratory sciences (allied health disciplines) in Kentucky, Morris (1988) stated that all higher educational institutions in the state had cooperated in that effort. The results were that articulation provided for the retaining of students in schools, public and private, for that discipline (Kentucky, 1981).

Malley's (1988) work on articulation programs in the western region of the United States found that the majority of institutions continued to be concerned with articulation. These included in-service meetings with the faculty of both the sending and the receiving institutions and the evaluation of courses for articulation. The degree of activity found, however, was varied and not a high priority concern for those colleges and universities.
Bogart and Murphey (1985) underscored the importance of the associate degree in articulation to four-year institutions. They reported that articulation efforts were the key ingredient to successful program transfer.

Palmer (1986) reported that transfer is promoted through articulation agreements with four-year colleges specifying the transferability of competencies as well as credits and formal and informal activities designed to promote dialogue among faculty members. Efforts to improve transfer depend largely on the information systems that serve both college personnel and students. An effort to increase the transfer function will be an attempt to more securely place the community college in the educational mainstream of student flow from high school to the baccalaureate.

Faculty collaboration in two-year and four-year institutions were reported as the "central essential element in successful transfer efforts" (National Center for Academic Achievement and Transfer, 1991). Faculty are often absent in meetings on articulation and transfer but are essential in the designing systems for the smooth transition of students from one academic institution to another (Richardson, 1993).

Iowa studies

Only one study was found that specifically addressed the articulation of course work between the two-year and four-year public institutions in Iowa. In 1972 a committee was established to review articulation and transfer problems between the 15 public community colleges and the three
regent institutions (Kintzer, 1976). The group was made into a permanent committee in 1973. All liberal arts and general education courses designed for transfer offered in the 15 community colleges of Iowa are accepted by all senior public universities in the state (Kintzer, 1976). Iowa had no articulation agreement for specific disciplines. An individual student's courses are evaluated course-by-course in each university. However, specific discipline agreements have been developed and are used in specific disciplines (Iowa State University, 1992).

Iowa's 15 community colleges have recently developed articulation agreements by vocational area between secondary programs and a specific community college. Under the guidelines of the State Department of Education, these agreements set the actual proficiency level for advanced placement for students who enroll in vocational programs. Agriculture is one vocational area that has been very active in the secondary/post-secondary articulation process (Lamers, 1993).

Summary

Articulation has been a concern for educators since the creation of the two-year institution with the mission of course transfer to four-year institutions. Referenced as one of the most important ideas that our education has contributed to the rest of the world (Richardson, 1993), the topic continues to be studied. Four types of transfer articulation agreements were defined by Kintzer (1989) as: 1) mandates for articulation of students by state constitution or legislation; 2) policies in states where all higher educational institutions operate under a sole
governing board; 3) agreements or voluntary interinstitutional policies between specific institutions for all course work or for only a particular segment of the curricula; and 4) matriculation of individual courses on a student-by-student evaluation by the four-year institution. Iowa regent institutions use both type 3 and type 4 determined by the particular degree received. The acceptance of credit by type 3 to Northwest Missouri State University (Maryville) and Southern Illinois University (Carbondale) attracts many Iowa AAS agricultural graduates. Most studies addressed either the transfer of academic credit (Zeldman, 1982; Darnes, 1971; McCracy, 1985; Naylor, 1987) or formalized agreements between institutions (Kintzer, 1971; Degus, 1987). Solutions include handbooks (Strain, 1982), informational systems (Palmer, 1986), and councils (Darnes, 1971; Kintzer, 1976).
CHAPTER III. METHODOLOGY

The purpose of this study was to gather and analyze data on the Associate of Applied Science (AAS) degree students in agriculture who transferred from one of Iowa's public community colleges between 1985 and 1990. Specifically, the population studied was agricultural students in vocational programs enrolled in community colleges who, upon graduation between 1985 and 1990, transferred to a four-year institution. Both descriptive and comparative methodology were employed in the analysis of the data received. Data were requested from two sources. A questionnaire was mailed to all of the AAS agriculture students who transferred to a four-year institution between 1985 and 1990 (see Appendix D). The second source of data was the four-year institution each student attended. Those institutions were mailed the institutional survey (see Appendix D). Data were collected regarding when the decision to transfer was made, assistance received about transfer and from whom, transfer issues and how they were addressed. Information concerning the role of student services in assisting transfer students was also collected. The institutional survey asked for grade point average and the transfer of all courses including vocational courses for each student. This chapter is organized into the following subsections: subjects, instrumentation, hypotheses, procedures, data analysis, and summary.
The population for this study was agricultural students from Iowa's community colleges who graduated in a vocational program, transferred to a four-year institution, and enrolled in an agricultural program between 1985 and 1990. Letters were mailed to all 15 Iowa community college agriculture department chairpersons requesting the name and last known address of all their Associate of Applied Science (AAS) degree recipients. Data were limited to those who received their degree between the years of 1985 and 1990, transferred to a four-year institution, and enrolled in an agricultural program. Prior to this study this population of Iowa AAS agriculture students who transferred was unknown. Based on data from one college (Ellsworth Community College), it was known, however, that 54 students had transferred during the 1985-1990 time period. It was believed that the population from the other 14 community colleges would develop a sufficient quantity for analysis.

Previous studies indicated that most respondents would have graduated and/or terminated their formal education by the time this research was conducted. Wielenga and others (1982) reported in their persistence study that over 90% of transfer students graduated within eight semesters of transfer. Eight semesters was interpreted as a four-year sequence. By fall 1992, AAS degree students who had transferred to a four-year institution prior to 1989 should either have completed their degree or discontinued their formal education. Students graduating in 1989 or 1990 may still be enrolled in school.
Instrumentation

Data were collected using two survey instruments. A student questionnaire mailed to each student and the second was mailed to the four-year institutions where the students continued their education. The student questionnaire was designed to collect data concerning the student satisfaction with institutional selection, issues affecting transfer, community college grade point average, time of the transfer, student persistence, and completion information. Data on the institutional survey included grade point average, transfer of courses, and bachelor degree completion.

Both instruments—the student questionnaire and the institutional survey of student information—are found in Appendix D.

Social security numbers were used only for access to individual student records in the institutional survey. Once institutional data were returned, all student identification was removed. The confidentiality of the students was maintained throughout this study in compliance with the Privacy Act and in adherence with the American Psychological Association. This study was approved by the ISU Committee on the Use of Human Subjects (see Appendix C).

A list of data needed was developed to survey student concerns and satisfaction with transfer. Prior to its use in this study, the questionnaire and the survey were evaluated for content and clarity by 12 faculty and admissions personnel representing both community college and four-year institutions. Input was solicited from six agricultural faculty and admissions personnel representing three institutions which award the
baccalaureate degree and four community college agricultural faculty and
two student services personnel.

A pilot study group was also utilized to evaluate the student survey
instrument for clarity of understanding and to verify time for completion.
Students receiving the Associate of Applied Science (AAS) degree in
agriculture from one community college (Ellsworth Community College)
between 1980 and 1984 were used as subjects in this initial evaluation of
the student questionnaire. Changes were made in the ordering of the
questionnaire and in the wording of some of the questions.

Hypotheses to be Tested

Hypotheses were tested in this study relating to the performance,
progress, problems, satisfaction, and degree achievement of Associate of
Applied Science (AAS) graduates in agriculture from Iowa’s community
colleges between 1985 and 1990 who transferred to a four-year institution.
Following are the hypotheses generated for this study:

Hypothesis One

There is no significant difference between the grade point average
prior to transfer by the AAS agricultural student and the grade point
average in the four-year institution.
Hypothesis Two

There is no significant relationship between the number of vocational credits accepted by the senior institution and the likelihood of student persistence as measured by (a) semesters enrolled and (b) degree attainment.

Hypothesis Three

There is no significant relationship between the time that a decision was made by an AAS agricultural student to transfer (prior to attending or freshman, sophomore, or following graduation) and (a) student persistence (semesters enrolled) in the four-year institution and (b) the attainment of a bachelor's degree.

Hypothesis Four

There is no significant difference in the academic performance (grade point average) at the four-year institution when students are classified by the time a decision was made by an AAS agricultural student to transfer (prior to attending or freshman, sophomore, or following graduation).

Hypothesis Five

There is no significant difference in the satisfaction of transfer counseling information that was received from faculty advisors and student services personnel from the two-year and the four-year institution as perceived by the AAS agricultural students.
Procedures

Each community college president was mailed a letter of notification about this study and that his agriculture department chairperson would be contacted. At the same time letters were mailed to each community college agriculture department chairperson in Iowa requesting the name and last known address of all of their Associate of Applied Science (AAS) degree recipients who received their degree between the years of 1985 and 1990 and transferred to another institution. All participants were identified by each Iowa community college agriculture department chairperson. Four community colleges who no longer have AAS agriculture programs were not included in this study. Those were Area IV (Northwest Iowa Technical College), Area V (Iowa Central Community College), Area XIV (Southwestern Community College), and Area XV (Indian Hills Community College).

From Iowa’s community college agriculture department chairpersons, a total of 254 names of students were collected. These students met the criteria set for this study (see Subject section in this chapter).

Student questionnaires were coded to determine which questionnaires were received. The institutional survey was enclosed in the mailing to each student to receive their permission for access to student records from the four-year institution (see Appendix D). When a student survey was returned, all coding and identification was removed from the questionnaire. A second mailing was made approximately 15 days following the initial mailing to those participants who had not returned the questionnaire. An attempt was made to telephone students not responding to the second mailing. A third set of materials was mailed to those
identified by telephone who indicated they would be willing to respond. A total of 187 surveys were received and used in this study.

Data Analysis

Both descriptive and comparative methodology were used to analyze the data. Descriptive data included the number of students who transferred over the time period studied, the reason for their selection of both the community college and the senior institution, the number and type of courses accepted for transfer, the satisfaction, the number of credit hours at the two-year school, the problems encountered in the transfer process, and the number of credit hours at the four-year college or university which was their institution of choice.

Comparisons of community college transfer students were made in regard to statistical differences in grade point average, when the decision to transfer was made, primary source of information and assistance in transferring, vocational credits accepted for transfer, number of credits earned after transfer, number of semesters enrolled in the college or university, and whether a degree was earned.

The Statistical Package StatView (Abacus Concepts, 1991) procedures for ONEWAY and ANOVA were used to analyze the data. ANOVA was used to test the hypothesis that the population means from which two or more samples were selected were equal. It is an inferential technique used to determine whether two or more means were significantly different from one another (Hinkle et al., 1979). The ANOVA procedure analyzes the variance of the scores of the dependent variable. The variation of the dependent
variable scores were divided into two parts. They were the variation of scores between the group means and the means of the total group (grand mean), and the variation of scores within each group. The test statistic for ANOVA is the F-ratio of the two variable estimates (Hinkle et al., 1979).

For the F-distribution to be used as the underlying distribution for the testing of hypotheses, the assumptions of random and independent sampling from the population, of the dependent variable being on at least an interval scale, of the populations from which the samples were selected being normally distributed, and of the variance of the populations being equal (Homogeneity of Variance) (Hinkle et al., 1979).

Analysis of variance-two-way classification was used to test hypotheses when two independent variables were considered simultaneously. The main advantage of the two-way classification was efficiency. Two separate hypotheses may be tested concurrently. One can test whether levels of one independent variable affects the dependent variable the same way across different levels of the second independent variable, or whether there was interaction between the two independent variables. The two-way also investigates how different levels of two independent variables affect the dependent variable. The .05 level of significance was utilized to test all hypotheses.

To test whether two variables of a cross-tabulation were independent of each other, the chi-square was used. Two variables were by definition independent if the probability that a case falls into a given cell was simply the product of the marginal probabilities of the two categories
defining the cell (Norusis, 1983). Chi-square was used with Hypothesis Three.

The statistical method for the independent sample groups for Hypothesis Two used the t-test. The t-test compares sample means by calculating the t and tests the significance of the difference between the means.

Summary

This chapter reviewed the subjects, instrumentation, hypotheses, procedures, and data analysis. Subjects were identified by their respective community college faculty. Other studies with Associate of Arts (AA) and Associate of Science (AS) degree transfer students were examined and the differences of the Associate of Applied Science (AAS) degree students noted in the development of the questionnaire and survey. Personnel at both community college and four-year institutions provided input on both instruments. A preliminary study was conducted prior to the subjects in this study to further test the student questionnaire. The hypotheses were stated in the null form and the data analysis utilized to test those hypotheses. Data analysis included both descriptive and statistical procedures.
CHAPTER IV. RESEARCH FINDINGS AND DATA ANALYSIS

Introduction

The statistical analysis and findings presented in this chapter were based on data collected from the 187 study participants. This represents a 73.62% response rate from the 254 AAS agricultural students who transferred to four-year institutions and were invited to participate in this study. Data were obtained from the student questionnaire and from the office of the registrar at 23 four-year institutions (Tables 3 and 4).

The findings will be in three sections. First the descriptive data from the student questionnaire will be reviewed in the order the questions were asked on this survey. Following will be the descriptive data from the institutional survey. Data collected to test the hypotheses and the statistical analyses will be the third section.

Description of Data Collected

Student questionnaire

The student questionnaire provided a significant amount of descriptive data regarding AAS agricultural transfer students as indicated in Table 3. Kirkwood Community College (Area X) had 56 students transfer from their program to a four-year institution. This represented the largest segment of the population (29.42%) who transferred to a four-year institution. Second was Ellsworth Community College, a part of Iowa Valley Community College District. As shown in Figure 2, they reported 54 AAS degree agricultural student transfers (28.88%). There were no student
Table 3. Iowa AAS agricultural students 1985-1990 and those who transferred to four-year institutions by community college district

<table>
<thead>
<tr>
<th>Iowa community college and location</th>
<th>Total AAS agricultural graduates 1985-1990</th>
<th>Total AAS transfers</th>
<th>Total AAS transfers in study</th>
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<tr>
<td>Area I Calmar</td>
<td>149</td>
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<tr>
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<th>Total AAS transfers in study</th>
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<td>6. Ellsworth Community College</td>
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<td>9. Kirkwood Community College</td>
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</tr>
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<td>15. Southeastern Community College</td>
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</tbody>
</table>

Figure 2. Iowa AAS agricultural transfer students 1985-90
transfers reported from Areas IV, V, XIV, XV, and XVI. This may be due to the lack of transfer information or counseling. Overall Iowa community college agricultural transfer rates for AAS students were similar for each year studied: 19.79% for 1985; 16.04% for 1986; 17.11% for 1987; 15.51% for 1988; 14.44% for 1989; and 17.11% for 1990. The actual number of transfers ranged from 27 (1989) to 37 (1985).

**School choice** A goal of this research was to survey the reasons why students chose a particular community college and later a specific four-year institution. The students in this study transferred to 23 different four-year institutions. Table 4 shows the number of students from each community college that attended each four-year institution included in this study. The primary reason students selected a particular community college was a desirable program or major (69.52%). This was also the primary reason for the selection of the four-year institution (67.38%). The second reason given for school selection was geographic location (35.83% for the two-year and 38.5% for the four-year institutions). Cost was also a determining factor with 33.69% citing that as a reason for the two-year college and 36.90% at the four-year institution. Available financial aid was important to 23.00% and 19.78% at each institution, respectively. The influence of friends or influence by parents or family was similar for the community college, with 40 naming friends and 41 naming family. However, friends played a more influential role in the four-year selection process, with 31.55% stating friends were influential while only 20.33% indicated family. The reputation of the institution was indicated as being important in the decision of school
Table 4. Four-year institution selected and community college attended by Iowa AAS agricultural transfer students 1985-90

<table>
<thead>
<tr>
<th>Four-year school</th>
<th>Number of transfers</th>
<th>Community college attended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iowa State University</td>
<td>46</td>
<td>16 Area VI; 6 Area VII; 14 Area X; 6 Area XI; 2 Area XII</td>
</tr>
<tr>
<td>Northwest Missouri State University</td>
<td>30</td>
<td>11 Area VI; 4 Area VII; 11 Area X; 4 Area XI</td>
</tr>
<tr>
<td>South Dakota State University</td>
<td>18</td>
<td>2 Area II; 4 Area III; 3 Area VI; 4 Area VII; 1 Area IX; 2 Area X; 2 Area XI</td>
</tr>
<tr>
<td>Southern Illinois University</td>
<td>18</td>
<td>2 Area III; 3 Area VII; 7 Area IX; 6 Area X</td>
</tr>
<tr>
<td>University of Wisconsin Platteville</td>
<td>14</td>
<td>1 Area I; 1 Area II; 2 Area III; 5 Area VI; 4 Area VII; 1 Area X</td>
</tr>
<tr>
<td>Western Illinois University</td>
<td>14</td>
<td>1 Area I; 2 Area III; 1 Area VI; 2 Area VII; 4 Area IX; 3 Area X; 1 Area XI</td>
</tr>
<tr>
<td>Buena Vista College</td>
<td>10</td>
<td>1 Area III; 5 Area VI; 2 Area VII; 2 Area X</td>
</tr>
<tr>
<td>University of Iowa</td>
<td>6</td>
<td>1 Area III; 4 Area VI; 1 Area X</td>
</tr>
<tr>
<td>Northeast Missouri State University</td>
<td>6</td>
<td>1 Area III; 4 Area VI; 1 Area X</td>
</tr>
<tr>
<td>University of Nebraska Omaha</td>
<td>4</td>
<td>1 Area X; 2 Area XII; 1 Area XIII</td>
</tr>
<tr>
<td>University of Northern Iowa</td>
<td>4</td>
<td>3 Area VI; 1 Area X</td>
</tr>
<tr>
<td>West Texas State University</td>
<td>3</td>
<td>2 Area VI; 1 Area X</td>
</tr>
<tr>
<td>Four-year school</td>
<td>Number of transfers</td>
<td>Community college attended</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>---------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Illinois State University</td>
<td>2</td>
<td>1 Area VII; 1 Area IX</td>
</tr>
<tr>
<td>Mankato State University</td>
<td>2</td>
<td>1 Area VI; 1 Area VII</td>
</tr>
<tr>
<td>University of Minnesota</td>
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<td>1 Area I; 1 Area II</td>
</tr>
<tr>
<td>Colorado State University</td>
<td>1</td>
<td>1 Area VI</td>
</tr>
<tr>
<td>Cornell College</td>
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<td>1 Area VI</td>
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<td>Eastern Illinois University</td>
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<td>1 Area X</td>
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<tr>
<td>Oklahoma State University</td>
<td>1</td>
<td>1 Area VII</td>
</tr>
<tr>
<td>Purdue</td>
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<td>1 Area VI</td>
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<tr>
<td>Southern Missouri State University</td>
<td>1</td>
<td>1 Area XI</td>
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<tr>
<td>Upper Iowa</td>
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<td>1 Area X</td>
</tr>
<tr>
<td>Vincennes University</td>
<td>1</td>
<td>1 Area II</td>
</tr>
</tbody>
</table>
choice by 83 community college students and 77 four-year institution students.

**Length of attendance** The data collected indicate that most students completed their community college degree in four semesters (83.42%), with 11.76% requiring five semesters (see Figure 3). All student respondents completed the two-year degree within seven semesters. Figure 4 reports the semesters enrolled in the four-year institution needed to attain a baccalaureate degree. Student attendance patterns for those who transferred and also graduated from the four-year institutions ranged from four semesters (26.20%) to nine semesters (2.14%). Others attended the four-year institutions for five (18.72%), six (17.64%), seven (3.21%), and eight (1.07%) semesters.

**Educational goal** Students were asked about their primary educational goal in attending the two-year college. As indicated in Figure 5, 147 (78.61%) students' goal was to obtain employment. Twelve (6.42%) wanted to transfer after receiving a two-year degree; eight (4.28%) were seeking only one year prior to transferring; 16 (8.56%) wanted to obtain skills to improve job performance; and four (2.13%) indicated other. At the four-year institution, 75.40% indicated a desire for a baccalaureate degree, 11.23% wanted to complete courses to improve job performance, and those completing courses to find employment were 13.37% (see Figure 6).

**Academic major** The study participants identified five agricultural majors at the community college. Agribusiness accounted for the largest group (60.43%) followed by farm management (28.34%), animal
Figure 3. The number of semesters attended to attain an AAS degree by Iowa agricultural transfer students in one of Iowa's community colleges graduating 1985-90

Figure 4. The number of semesters needed to attain a baccalaureate degree by Iowa agricultural transfer students while enrolled at a four-year institution who attained their AAS degree 1985-90
1. Obtain employment after completion of AAS degree
2. Transfer to a four-year institution
3. One year and transfer to a four-year institution
4. Obtain skills to improve job performance
5. Other reasons for attendance

Figure 5. Goals of Iowa AAS agricultural transfer students 1985-90

science (7.49%), horticulture (1.07%), and other (2.67%) (see Figure 7). Data by year of graduation, major and two-year institution are found in Appendix E. These AAS degree agricultural students enrolled in nine agricultural majors when they transferred to four-year institutions.

Agribusiness was again the primary choice, with 45.99%. The others were farm management (14.44%), animal science (7.49%), horticulture (1.07%), power mechanics (1.07%), agronomy (17.68%), conservation (1.60%), education (5.35%), economics (1.07%), and other (5.35%) (see Figure 8).
1. Obtain a bachelor's degree
2. Obtain skills to improve job performance
3. Complete courses to find employment

Figure 6. Iowa AAS agricultural transfer students' 1985-90 four-year institution goal

Student institutional satisfaction Overall student satisfaction

with the community college and the four-year institution was also queried. Data indicated that 80.77% rated their satisfaction with the community college program as high or very high with less than 8% rating it low or very low. At the four-year school 76.46% indicated a high or very high approval of the program, with 10.68% in the low or very low categories. Instruction was rated high by 47.59% and 49.73% of the respondents respectively for each institution. Students reported an overall satisfaction with student services at the community college (18.81%) and
Community College Agricultural Major

1. Agribusiness 60.43%
2. Farm Management 28.34%
3. Animal Science 7.49%
4. Horticulture 1.07%
5. Other 2.67%

Figure 7. Iowa AAS agricultural transfer student agricultural major at community college 1985-90

19.78% in the four-year institutions. Student services satisfaction was reported as low or very low by 11.82% of the respondents at the community college and 20.85% recorded those responses at the four-year institutions. Satisfaction with faculty advising received the following ratings: 63.44% high or very high at the 15 community colleges and 36.38% high and very high at the four-year institutions. (Hypothesis Five addresses specifically student satisfaction of transfer information and counseling using various sources.) Extracurricular activities were rated high or
Figure 8. Iowa AAS agricultural transfer student academic major at four-year institution 1985-90

Transfer problems

Student respondents were asked about the problems they encountered in the transfer process. The major problem cited was loss of vocational credits (26.74%). Other reasons given were lack of general education preparation (13.90%), lack of proper academic
preparation (9.09%), lack of personal study skills (8.02%), loss of
general education credits (6.95%), and other reasons were 6.95%.

Of the 187 students, 96 or 51.34% have received their baccalaureate
degree, 23 (12.30%) are still enrolled in school, and 68 (36.36%) have
terminated their formal education (see Figure 9). Table 5 shows those
institutions where the students transferred and the number receiving a
degree. Data were gathered on the reasons why students left the four-year
institution prior to graduation. Most gave job opportunity (42.49%) as
the reason for leaving prior to graduation. Other reasons given were
financial reasons (19.78%), academic status (17.58%), and health (3.66%).
Those who marked other reasons (16.49%) gave as their specific reason
responses such as "family moving away," "homesickness," and "entered
military service."

Demographics At the time the questionnaires were completed, most
of the students were employed full time in the area of their college major
(69.52%) (see Figure 10). An additional 7.49% were employed part time in
the area of their college major. About 10.16% indicated they were
employed full time and 2.67% employed part time but not in the area of
their college major. Only 1.07%, or two of the 187 respondents, indicated
they were seeking employment, and the remainder (17 or 9.09%) were
classified as other. Most of those in the other category (14) were
classified on the institutional questionnaire as full-time students
working on their degree.

Nearly all (93.59%) of the students were enrolled full time during
their study at the community college. Only 2.13% were part time and 4.28%
1. Still enrolled  (23 students)
2. Terminated formal education (68 students)
3. Received BS degree  (96 students)

Figure 9. Status of Iowa AAS agricultural transfer students 1985-90

indicated both a full-time and a part-time status depending upon the semester. At the four-year institution, 92.51% attended full time; 4.28% were part time; and 3.21% were both during their enrollment. This is consistent with other vocational education program data from Iowa's community colleges.

Only six of the student respondents were female (3.21%), with 96.79% or 181 males in the group. Unmarried students at the community college numbered 174 or 93.05% in this study. Only 168 (89.84%) were single at the four-year institution. The findings were that 3.35% were married and
Table 5. Number of Iowa AAS agricultural transfer students attending selected four-year institutions, and number and percentage attaining a Bachelor of Science (BS) degree from those institutions 1985-90

<table>
<thead>
<tr>
<th>Four-year institution</th>
<th>Number of transfers</th>
<th>Number of BS degrees by institution</th>
<th>Percent attaining the BS degree by institution (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iowa State University</td>
<td>46</td>
<td>17</td>
<td>36.95</td>
</tr>
<tr>
<td>Northwest Missouri State University</td>
<td>30</td>
<td>21</td>
<td>70.00</td>
</tr>
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<td>South Dakota State University</td>
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<td>9</td>
<td>50.00</td>
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<td>8</td>
<td>57.14</td>
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<td>Buena Vista College</td>
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<td>University of Iowa</td>
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<td>Four-year institution</td>
<td>Number of transfers</td>
<td>Number of BS degrees by institution</td>
<td>Percent attaining the BS degree by institution (%)</td>
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<tr>
<td>Upper Iowa University</td>
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<td>0.00</td>
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</table>
Figure 10. Current employment status of Iowa AAS agricultural transfer students 1985-90

1.60% were divorced as community college students, as compared to 7.49% married and 2.67% divorced.

Institutional questionnaire

Some of the data collected on the student questionnaire were collected again on the institutional questionnaire to serve as a validity check. Examples of questions asked on both instruments were student
status at the four-year institution, whether a degree had been granted, and the student’s academic major. Data were consistent from both sources.

An additional test of validity of the data was conducted on the students who were in the study and who had attended Ellsworth Community College. Grade point average responses of Ellsworth’s participants were checked with registrar records and found to be accurate.

Credit transfer Data were collected for the total credits accepted, the vocational credits accepted, and how those vocational credits were treated (direct course-for-course or as electives). The community college AAS agricultural transfer students' total credits accepted by the four-year institutions could be categorized as two groups: 1) institutions that accepted nearly all of the total community college earned credits (63-66 credits) equivalent to four semesters of work, and 2) institutions that accepted approximately one year of community college work (30-36 credits). Figure 11 contains these data.

Of the vocational credits that were accepted for transfer, the data again indicate two groups of four-year institutions. See Figure 12. One group accepted between 10 and 20 credits (79 students or 42% of the total in this study). Thirty-four percent of the students in this study (64 transfer students) had between 40 and 50 of their vocational credits accepted by the four-year institution. The disposition of those vocational credits at the four-year institution was also collected (Figure 13). Thirty AAS agricultural transfer students received credit for 10-15 vocational credits (course-for-course), while 38 transferred between 20 to
Institution Credits Accepted

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<th>Number Credits Accepted</th>
<th>Number AAS Students</th>
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<td>91-100</td>
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</table>

Figure 11. Total credits accepted by four-year institution for Iowa AAS agricultural transfer students 1985-90

25 direct vocational credits. The acceptance of vocational credits as electives by four-year institutions was more clustered with 33 transferring between 10 and 15 vocational credits as electives; 76 transferring 16-20 credits; 31 transferring 21-25 credits; and 25 having
Figure 12. Total vocational credits accepted for transfer by four-year institutions for Iowa AAS agricultural transfer students 1985-90

Figure 13. Vocational credits accepted directly (course-for-course) for Iowa AAS agricultural transfer students 1985-90
between 26 and 30 credits transferred. The data regarding vocational credits accepted as electives are reported in Figure 14.

The number of credits completed by each student was collected on the institutional questionnaire from the four-year institution each attended. These data are found in Figure 15. Eight students (4.29%) accumulated over 100 credits. There were 33 who had less than 40 credits at the four-year institution and thus did not complete the four-year degree.

**Articulation agreement** Only 23.53% of the students attended a four-year institution that indicated an articulation agreement was in place between Iowa's community college and their institution (see Figure 16). Table 5 shows the number of students from this study who transferred to each institution and the number who actually received a bachelor's

![Figure 14. Vocational credits accepted as electives by four-year institutions for Iowa AAS agricultural transfer students 1985-90](image-url)
Figure 15. Total credits completed at four-year institutions by Iowa AAS agricultural transfer students 1985-90

Figure 16. Articulation agreements between Iowa community colleges and four-year institutions selected by Iowa AAS agricultural transfer students 1985-90

1. Articulation agreement between institutions 5 (44 students attended those 5 institutions)
2. No articulation agreement between institutions 18 (143 students attended those 18 institutions)
degree. Table 4 contains the Iowa community college where each student received his/her first degree and the four-year institution selected.

Included in the data collected were the analysis and reporting of the hypotheses for this study. The summary of those findings and the analysis of each hypothesis are presented in the next section.

**Hypotheses**

**Hypothesis One**

There is no significant difference between the grade point average prior to transfer by the AAS agricultural student and the grade point average in the four-year institution.

This hypothesis was tested using the dependent t-test. Figure 17 shows the graph of the community college GPA, Figure 18 shows the four-year institution GPA, and the results of the dependent t-test are in Table 6. The community college mean GPA was 3.30, and the mean GPA at the four-year institution was found to be 3.01. The range of grades was greater at the four-year institutions (GPA of 1.01 to 3.97 as compared to a GPA range of 2.11 to 4.00). With the resulting t value of 6.19 showing that a probability of .0001 of these data occurring means that the null hypothesis was rejected. It was concluded that there was a significant difference between the GPA at the two-year institution and GPA at the four-year institution. This analysis is consistent with the review of literature (Carter, 1985; Sayles, 1987; Cavanaugh, 1987; Holliman, 1988).
Figure 17. Community college grade point average for Iowa AAS agricultural transfer students 1985-90

Figure 18. Four-year institution grade point average for Iowa AAS agricultural transfer students 1985-90
Table 6. Dependent t-test between community college and four-year GPA for Iowa AAS agricultural transfer students 1985-90

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<th>Variance</th>
<th>Coef. var.</th>
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<td>187</td>
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<td>Four-year institution</td>
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<td>2.07</td>
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<td>Four-year institution</td>
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<td>6.19</td>
<td>.0001</td>
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</table>

**Hypothesis Two**

There is no significant relationship between the number of vocational credits accepted by the four-year institution and the likelihood of student persistence as measured by (a) semesters enrolled and (b) degree attainment.

Part (a) of this hypothesis was measured using Pearson product moment correlation coefficient, while part (b) utilized the independent t-test comparing those who attained the degree with those who did not attain the degree. Data to test the Pearson correlation are found in Table 7 and the independent t-test in Table 8. Statistical tables were referenced
Table 7. Pearson correlation of vocational credits accepted and semesters enrolled by Iowa AAS agricultural transfer students 1985-90

<table>
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<tr>
<th>Number</th>
<th>Correlation</th>
<th>R-squared</th>
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<td>.0173</td>
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</tbody>
</table>

Table 8. Independent t-test of vocational credits accepted and achievement of BS degree by Iowa AAS agricultural transfer students 1985-90

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Mean</th>
<th>S.D.</th>
<th>Std. error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>96</td>
<td>33.3958</td>
<td>13.9136</td>
<td>1.4201</td>
</tr>
<tr>
<td>Group 2</td>
<td>91</td>
<td>25.1209</td>
<td>14.5318</td>
<td>1.5233</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D.F.</th>
<th>Unpaired t value</th>
<th>Prob. (2-tail)</th>
</tr>
</thead>
<tbody>
<tr>
<td>185</td>
<td>3.9781</td>
<td>.0001</td>
</tr>
</tbody>
</table>

*aGroup 1 = Received BS degree; Group 2 = Did not receive BS degree.

(Minium, 1978) to determine whether a correlation coefficient of -.1314 was significant with 186 degrees of freedom. The finding was that no significant relationship exists between the number of vocational credits accepted and student persistence as measured by semesters enrolled, thus the null hypothesis was retained. The initial prediction that there would be a relationship based on the belief that an increased number of
vocational credits which transferred would decrease the likelihood of a
student terminating his/her formal education was not verified.

To test part (b) the independent t-test was used. A t value was 3.98
with one probability of .0001. Based on these results, the null
hypothesis was rejected. Hypothesis Two (b) that students who graduated
would have a greater number of vocational credits accepted when compared
with students who did not graduate was verified.

The initial prediction was that the larger the number of vocational
credits accepted by the four-year institution, the greater the likelihood
of student persistence as measured by (a) semesters enrolled and (b)
degree attainment. For this prediction the null hypothesis for part (a)
was retained and for part (b) was rejected. The greater the number of
vocational credits accepted by the four-year institution for the student
did result in a larger number receiving a baccalaureate degree but had no
relationship with semesters enrolled.

**Hypothesis Three**

There is no significant difference among the times when a decision
was made by an AAS agricultural student to transfer (prior to attending or
freshman, sophomore, or following graduation) and (a) student persistence
(semesters enrolled) in the four-year institution and (b) the attainment
of a bachelor’s degree.

Figure 19 graphs when the decision was made to transfer. To analyze
this hypothesis statistically, a one-way analysis of variance (ANOVA) was
used for part (a) and the chi-square test of independence for part (b).
1. During high school or while a freshman at the community college
2. While a sophomore at the community college
3. After graduation from the community college

Figure 19. When decision was made to transfer by Iowa AAS agricultural student transfers 1985-90

Group 1 consisted of students who made the transfer decision prior to attending or during the freshman year at the community college. Group 2 made the decision to transfer during the second year of college. Those in Group 3 decided to transfer following graduation. Table 9 contains the results of the one-way ANOVA. The ANOVA revealed a mean of 5.25 for Group 1, 4.29 for Group 2, and 4.02 for Group 3, with $F(2, 184) = 3.61, p < .05$. The Scheffé F-test was a post hoc procedure comparing between groups. This is considered to be a more conservative statistic. The results indicated an $F$ value of 2.12 when using the Scheffé test to compare
Table 9. One-way ANOVA of when decision was made and semesters enrolled by Iowa AAS agricultural transfer students 1985-90

<table>
<thead>
<tr>
<th>Source</th>
<th>D.F.</th>
<th>Sum of squares</th>
<th>Mean square</th>
<th>F-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>2</td>
<td>20.97</td>
<td>10.48</td>
<td>3.61</td>
</tr>
<tr>
<td>Within groups</td>
<td>184</td>
<td>534.67</td>
<td>2.90</td>
<td>p=.029</td>
</tr>
<tr>
<td>Total</td>
<td>186</td>
<td>555.64</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Model II estimate of between component variance = .1421)

<table>
<thead>
<tr>
<th>Group*</th>
<th>No.</th>
<th>Mean</th>
<th>S.D.</th>
<th>Std. error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>16</td>
<td>5.25</td>
<td>1.98</td>
<td>.50</td>
</tr>
<tr>
<td>Group 2</td>
<td>77</td>
<td>4.29</td>
<td>1.78</td>
<td>.20</td>
</tr>
<tr>
<td>Group 3</td>
<td>94</td>
<td>4.02</td>
<td>1.59</td>
<td>.16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Mean Difference</th>
<th>Scheffé F-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1 vs. Group 2</td>
<td>.96</td>
<td>2.12</td>
</tr>
<tr>
<td>Group 1 vs. Group 3</td>
<td>1.22</td>
<td>3.55</td>
</tr>
<tr>
<td>Group 2 vs. Group 3</td>
<td>.26</td>
<td>.51</td>
</tr>
</tbody>
</table>

*Group 1 = Decision prior to attending or while a freshman; Group 2 = Decision as a sophomore; Group 3 = Decision following graduation.
Group 1 vs. Group 2. Group 1 vs. Group 3 was 3.55, while the results of Group 2 vs. Group 3 was 0.51 (Table 9). The initial hypothesis of no difference among the three means was reported. The Scheffé test was unable to locate where the significant difference was located, but the difference is assumed to be between the two extreme groups (1 and 3).

This resulted in the null hypothesis being accepted for part (a) of this hypothesis. The initial prediction was that the earlier in the academic program a decision was made by an AAS agricultural student to transfer, the better the student persistence as measured by semesters enrolled. Therefore, hypothesis (a) was found not to be significant. The data supported this hypothesis. Therefore, a conclusion could be made that there is a relationship between earlier decision making and persistence in the four-year institution.

Part (b) of Hypothesis Three tested the independence between the time when a decision was made by an AAS agricultural student to transfer (prior to attending or freshman, sophomore, or following graduation) and the attainment of a bachelor’s degree (Tables 10, 11, and 12). For part (b) a chi-square of independent means was used with contingency tables. The analysis was of two variables which were classified into a number of categories. The chi-square was 2.37 and was not significant at the .05 level.

The null hypothesis was not rejected. The initial prediction that the earlier a decision was made the more likely the student would be to persist as measured by (a) semesters enrolled and (b) in receiving the four-year degree was not supported.
Table 10. Observed frequency table of time of Iowa AAS agricultural transfer student decision to transfer and the attainment of a bachelor's degree for those attaining AAS degree 1985-90

<table>
<thead>
<tr>
<th></th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree</td>
<td>9</td>
<td>44</td>
<td>43</td>
<td>96</td>
</tr>
<tr>
<td>No degree</td>
<td>7</td>
<td>33</td>
<td>51</td>
<td>91</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>77</td>
<td>94</td>
<td>187</td>
</tr>
</tbody>
</table>

*Group 1 = Decision prior to attending or while a freshman; Group 2 = Decision as a sophomore; Group 3 = Decision following graduation.

Table 11. Chi-square of time of Iowa AAS agricultural transfer student decision to transfer and student persistence (semesters enrolled) 1985-90

<table>
<thead>
<tr>
<th></th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree</td>
<td>56.25</td>
<td>57.14</td>
<td>45.74</td>
<td>51.34</td>
</tr>
<tr>
<td>No degree</td>
<td>43.75</td>
<td>42.86</td>
<td>54.26</td>
<td>48.66</td>
</tr>
<tr>
<td>Total</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

*Group 1 = Decision prior to attending or while a freshman; Group 2 = Decision as a sophomore; Group 3 = Decision following graduation.

Table 12. Chi-square of time of Iowa AAS agricultural transfer student decision to transfer and the attainment of a bachelor's degree 1985-90

<table>
<thead>
<tr>
<th>D.F.</th>
<th>Total chi-square</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2.37</td>
<td>.31</td>
</tr>
</tbody>
</table>
Hypothesis Four

There is no significant difference in the academic performance (grade point average [GPA]) at the four-year institution when students are classified by the time a decision was made by an AAS agricultural student to transfer (prior to attending or freshman, sophomore, or following graduation).

The analysis of variance (ANOVA) was used to test this hypothesis. The independent variable was the time when the student decided to attend a four-year institution, and the dependent variable was the grade point average received at that four-year institution. Group 1 consisted of students who made the transfer decision prior to attending or during the freshman year at the community college. Group 2 made the decision to transfer during the second year of college. Those in Group 3 decided to transfer following graduation. The results are found in Table 13. As the table shows, the F-test was .2219 and p=.80. The findings were that no significant difference was observed.

The null hypothesis was not rejected. The original prediction was that the earlier in the academic program that a decision was made to transfer, the better the grade point average at the four-year institution. The statistical analysis of the data suggest that when a decision was made has no significant effect on grade point average.

Hypothesis Five

There is no significant difference in the satisfaction of transfer counseling information that was received from faculty advisors and student
Table 13. One-way ANOVA of time of Iowa AAS agricultural transfer student decision to transfer and student GPA at the four-year institution 1985-90

<table>
<thead>
<tr>
<th>Source</th>
<th>D.F.</th>
<th>Sum of squares</th>
<th>Mean square</th>
<th>F-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>2</td>
<td>1753.37</td>
<td>076.69</td>
<td>.2219</td>
</tr>
<tr>
<td>Within groups</td>
<td>184</td>
<td>726897.45</td>
<td>3950.53</td>
<td>p=.80</td>
</tr>
<tr>
<td>Total</td>
<td>186</td>
<td>728650.82</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Model II estimate of between component variance = -57.6307)

<table>
<thead>
<tr>
<th>Group</th>
<th>No.</th>
<th>Mean</th>
<th>S.D.</th>
<th>Std. error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>16</td>
<td>2.96</td>
<td>8.36</td>
<td>20.90</td>
</tr>
<tr>
<td>Group 2</td>
<td>77</td>
<td>3.05</td>
<td>6.13</td>
<td>6.99</td>
</tr>
<tr>
<td>Group 3</td>
<td>94</td>
<td>2.99</td>
<td>6.01</td>
<td>6.20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Mean difference</th>
<th>Scheffé F-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1 vs. Group 2</td>
<td>-8.79</td>
<td>.1296</td>
</tr>
<tr>
<td>Group 1 vs. Group 3</td>
<td>-3.33</td>
<td>.0192</td>
</tr>
<tr>
<td>Group 2 vs. Group 3</td>
<td>5.46</td>
<td>.1598</td>
</tr>
</tbody>
</table>

*Group 1 = Decision prior to attending or while a freshman; Group 2 = Decision as a sophomore; Group 3 = Decision following graduation.
services personnel when comparing the two-year and the four-year institution as perceived by the AAS agricultural students.

The data collected did not allow statistical analysis. The student respondents marked multiple categories which did not result in a choice of one group over another for statistical comparisons. Some respondents indicated a level of satisfaction for each of the six categories, thus the total for faculty, student services personnel, and admissions counselors exceeded the number of total respondents in the study (187). However, the results of the questionnaire did result in some descriptive data of student satisfaction with transfer counseling and information sources.

There were 110 student respondents who used community college faculty as a source for transfer information and counseling; 95 indicated they had used four-year faculty. Those receiving counseling information and counseling from community college student services were 45; 46 used the four-year institution student services. In addition, 107 marked the admissions personnel. Thus, 205 students responded to the faculty question, 91 to student services, 107 to admissions, and 18 to others. All were rated on a five-point scale with five being very satisfied and one as very dissatisfied. The mean community college faculty counseling satisfaction was 4.41. The four-year institutional faculty received a mean satisfaction rating of 3.47. The mean satisfaction with student services personnel was 3.86 for the community college and 3.34 for the four-year institutions. The data indicated a mean satisfaction of 4.05 for admissions counselors. Satisfaction with others received the highest mean with 4.61.
It appears from these data that the incidence and satisfaction of faculty advice in transfer is important to this population when making transfer decisions. The students used their academic advisors (teachers) as their primary source of transfer information, and most indicated a level of satisfaction with the information received. The conclusion is that faculty at both the two-year and the four-year institutions should be knowledgeable in transfer information and opportunities for the AAS degree agricultural students. Since the initial prediction was that there would be no difference in the satisfaction of counseling from faculty advisors and student services personnel from both the two-year and the four-year institution, no statistical conclusion can be made other than the incidence and satisfaction found by the mean for each group.
CHAPTER V. SUMMARY, DISCUSSION, AND CONCLUSIONS

This study was designed to answer questions regarding the transfer and academic success rate of community college Associate of Applied Science (AAS) degree students. Even though the mission of vocational educational programs is for immediate job placement, a goal of this study was to determine the incidence of transfer of AAS agricultural students. Transfer problems and the source of and satisfaction with transfer information and counseling were studied. The population for this study were those students receiving their AAS degree in agriculture from one of Iowa's community colleges between 1985 and 1990. This time frame allowed the AAS transfer student sufficient opportunity to complete a bachelor's degree.

One of the largest enrollment vocational programs in many community colleges is the AAS degree program in agriculture. During the years 1985-1990, 2,362 agricultural students completed vocational educational programs in agriculture in Iowa's 15 community colleges. Even though vocational educational programs including those in agriculture were not created nor intended for transfer, 254 students from those institutions did transfer to four-year institutions. This research was designed to collect descriptive and statistical data about those AAS vocational students in agriculture who transferred to four-year institutions.

There is a paucity of information concerning the occupational, vocational students who reassess their career goals and decide to transfer to a four-year institution with an Associate of Applied Science (AAS)
degree. The original intent of the AAS degree was for students planning to enter an occupation and not continue their formal education at a four-year institution (AACJC, 1984). However, the literature does contain studies indicating that AAS students do transfer (Diener, 1986; Cohen & Brawer, 1982). Kintzer and Wattenburg (1985) even listed articulation agreements specifically for vocational-technical credit transfer.

There were no studies of agricultural students who transferred from AAS degree programs in the literature. However, some vocational disciplines do have students who regularly transfer. Those disciplines include health occupations where students transfer their AAS degree (licensed practical nursing degree) to a four-year institution to complete a registered nurse program (Ford Foundation, 1984; Southern Regional Education Board, 1979). Given this lack of data about AAS agricultural students who transfer, it was determined that this study could make a contribution to the body of knowledge about transfer students.

Data for this study were collected from 187 (73.62%) of the 254 students who received an AAS degree and transferred to one of 23 four-year institutions. In this study, 51.3% of those transfer students received their Bachelor of Science (BS) degree from one of those institutions. Data further indicate that these students are successfully employed in the area of their academic major (animal science, agronomy, agribusiness, production agriculture).

In this study, 74% of the 187 who responded transferred to one of six four-year institutions. Those institutions and the number that transferred are as follows: Iowa State University (46), Northwest
Missouri State University (30), South Dakota State University (18), Western Illinois University (18), University of Wisconsin at Platteville (14) and Southern Illinois University (14). Five of those have an articulation agreement with the Iowa community colleges. Among the six four-year institutions that received the largest number of AAS agricultural transfer students, only South Dakota State University has no agreement.

Data were collected about Iowa AAS agricultural transfer students that were not previously available. This research indicated that with an articulation agreement, quality transfer information and counseling, and a high grade point average (GPA), many of Iowa’s AAS agricultural students who do transfer are capable of academic success in four-year institutions (96 of the 187 received a degree and 19 are still enrolled).

Five hypotheses were formulated to determine whether there was a relationship between when the decision was made to transfer by AAS agricultural community college students and their performance and progress in the four-year institution. These included studying 1) the relationship between grade point average (GPA) at the community college and at the four-year institution; 2) the vocational credits accepted by the four-year institutions and student persistence as measured by semesters enrolled and degree attainment; 3) when the decision was made to transfer and persistence (semesters enrolled) and degree attainment; 4) when the decision was made to transfer and GPA; and 5) student source of and satisfaction with transfer information and counseling.
One of the objectives of this study was to determine whether there was a significant difference between the grade point average (GPA) prior to transfer by the AAS agricultural student and the grade point average in the four-year institution (Hypothesis One). The data collected in this study indicate the better the GPA prior to transfer, the better GPA for that student in the four-year institution. It was also found that the range of grades was greater at the four-year institution than at the community college. The findings of this study were consistent with other studies in the literature that there is a positive relationship between the GPA earned at the community college and the four-year institution. Since most students in this study were male (96%), single, full-time students at the community college (94%) and at the four-year college (93%), no additional statistical analysis was made on those factors.

These data supported the work of Sayles (1987), Holliman (1988), Hills (1965), and Echternacht (1968), who concluded that the transfer student performance matched that of the native student in the four-year institution. Carter's (1985) findings were that the transfer actually outperformed the native student, while Sloan (1979) found transfer students had an initial drop in GPA following transfer. Vaughan and Templin (1987) found two-year transfer students with low academic qualifications performed well when compared to students of similar entrance characteristics at the university.

The findings from Hypothesis Two (a) of this study were that no significant relationship exists between the number of vocational credits accepted and semesters enrolled. The time spent in the four-year
institution following transfer had no significant relationship with the number of vocational credits accepted. The review of literature found ten studies related to the transfer of vocational credits. However, they were related to incidence of transfer of vocational students (Minnesota, 1979; Hawaii, 1980; Minnesota, 1982) or concerning transfer agreements (Southern Regional Education Board, 1979; Joint Committee on Transfer Students, 1983). Other studies addressed the curricula for transfer students (California, 1986; NEA, 1992), the transfer process (Watkins, 1990), and the history (Eells, 1941; Kissler, 1981). No study of the relationship of vocational credit transfer and semesters enrolled (persistence) was found in the review of literature. These data appear to make a contribution to the knowledge base that there is no significant relationship between time spent in the four-year institution and the number of vocational credits accepted.

For part (b) of Hypothesis Two (the relationship between the number of vocational credits accepted by the four-year institution and degree attainment), the data in this study suggest that the greater the number of vocational credits accepted, the higher the number of transfer students that will receive a baccalaureate degree. These data support the work of House (1989), who reported that students who had junior status upon graduation had higher graduation rates.

Findings from Hypothesis Three indicate that selected institutions (Northwest Missouri State University, Southern Illinois University, Western Illinois University, University of Wisconsin, and to a lesser extent South Dakota State University) will accept vocational credits from
Iowa community college agricultural programs more readily than the other transfer institutions in this study. Those institutions also reported a higher number of completers or students still pursuing their degree. It should be noted that Iowa State University has recently instituted an agreement with five community colleges for acceptance of agriculture courses transfer. These are in addition to the standard 16 vocational credits allowed under the past agreement at Iowa State University (D. E. Green, personal communication, May 18, 1994).

The data in this study supported the initial prediction that the earlier in the academic program an AAS agricultural student decides to transfer, the better the student persistence as measured by semesters enrolled and in receipt of a Bachelor of Science (BS) degree. The ability to matriculate vocational credits to the four-year institutions for the students was important for persistence leading to degree achievement. More AAS agricultural transfer students receive their baccalaureate degree when a larger number of vocational credits are accepted by the four-year institution.

When evaluating transfer of vocational credits, two different groups of institutions emerged. One group of four-year institutions accepted between 10 and 20 credits (79 students or 42% of the total in this study), and the other group accepted between 40 and 50 of their vocational credits (64 students or 34%). The greater the number of vocational credits accepted by the four-year institution, the larger the number receiving a baccalaureate degree. As examples of programs designed to assist with this process, the Capstone program at Southern Illinois University (SIU)
and a similar one at Northwest Missouri State University (NWMSU) were
designed for AAS transfers. The AAS community college transfer student
enters the program as a junior and has the potential of completing a
bachelor's degree in four semesters without regard to the previous course
work. During the six years of this study, Northwest Missouri State
University (NWMSU) had a 70% degree completion rate.

The literature does contain studies relating to credit transfer and
the length of time transfer students are enrolled in a four-year
institution. Cox and Harden (1989) reported that 48% of vocational
transfer students were able to complete their baccalaureate degree in four
years following graduation. Other studies of Associate of Arts (AA) and
Associate of Science (AS) degree transfer students used demographic,
academic, or course transfer (Deana-Ramos, 1987; Holliman, 1988; House,
1989).

The findings of this study also indicate that no significant
statistical difference was found between when a decision was made to
transfer and the grade point average at the four-year institution
(Hypothesis Four). Giddings (1985) found that Iowa community college
transfers (non-vocational) who had greater than 60 semester hours
performed better than other college transfers when measured by grade point
average, semesters enrolled, and graduation rate. In 1986, Oswalt found
no statistical differences in Iowa community college student performance
in the four-year institution when compared by the total semester hours
accepted for transfer.
The incidence of satisfaction with faculty advice in the transfer process is important to this population when making transfer decisions (Hypothesis Five). No statistical analyses were conducted on the data collected for Hypothesis Five. Student respondents marked multiple categories which did not result in a choice of one group over another and thus did not allow for statistical comparisons. However, the questionnaire responses did provide some descriptive data. One hundred ten of the 187 students indicated that they had used community college faculty for transfer information and counseling. Ninety-five reported transfer counseling from the four-year college faculty. Nearly 93% of the students gave faculty a high or very high satisfaction rating for their work. Forty-five respondents received transfer counseling and information from the community college student services and 46 of the respondents from the four-year institution student services, respectively. Satisfaction with student services in the transfer process was high or very high on 69.23% of the surveys. In addition, 107 cited admissions personnel as their source of transfer information and counseling. The students used their academic advisors (teachers) as their primary source of transfer information, and most indicated a high or very high level of satisfaction with the information received. These data underscore the importance of having faculty at both the two-year and the four-year institutions be knowledgeable about transfer information and opportunities for the agricultural students.

The data do not support the literature that states there has been a lack of communication in the transfer process (Parnell, 1985). Owens'
(1987) study suggested that the success of a transfer program was determined at the receiving institution, while Richardson (1993) reported that the biggest obstacle in transfer was the lack of collaboration between the faculty from the two-year and the four-year institutions. While advising has always been thought to be a strength of agricultural programs at both two-year and four-year institutions, this study appears to affirm that belief.

Research Contributions

This research has rendered important findings regarding the Associate of Applied Science (AAS) transfer student using an agricultural population from Iowa's community colleges. Data reported in this study are among the first about students traditionally believed to be a non-transfer population. In reviewing the results of this study, it should be noted that 2,198 of 2,362 students completed the school to work transition to direct employment. The major contributions are as follows:

1. The data indicated that 10.7% of Iowa's AAS agricultural students do transfer and most of those students earn a bachelor's degree (51.34%).

2. Faculty at both the community college and the four-year institution are key to the transfer process. The findings of Hypothesis Five, even though not statistically evaluated due to a limitation in this study, provide data confirming the importance of faculty in the transfer process.

3. Articulation agreements may be important in selection of the four-year institution. Twenty-one percent (5) of the four-year
institutions in this study had articulation agreements. They received 65.24% of the AAS agricultural transfer students (122 students).

4. This study supported other research reported in the literature concerning the academic grade point average (GPA) at the community college and at the four-year institution. There is a positive relationship between the GPA at the community college and the four-year institution for the AAS transfer student. The higher the GPA prior to transfer, the higher GPA for that student in the four-year institution.

5. The data in this study suggest that the greater the number of vocational credits accepted results in more transfer students receiving a baccalaureate degree. No study of the relationship of vocational credit transfer and semesters enrolled (persistence) was found in the review of literature.

6. School choice was found to be based primarily upon desirable program or major at both the community college and the four-year institution. Other major factors cited by the students were geographic location and cost.

7. The earlier in the academic program that a decision was made by an AAS agricultural student to transfer, the better the student persistence when measured by semesters enrolled and in receiving a bachelor's degree.
Implications and Recommendations

Vocational educational programs in agriculture at Iowa's community colleges are meeting their stated mission of school to work transition and employment in agriculture. However, it is important to recognize that some students do transfer (10.7% of Iowa's AAS agricultural students during the six years of this study) to four-year institutions. This study was conducted to learn about that population.

Based on the data (187 of 254 transfer students) presented in this study, articulation agreements may be an important issue for this population. Even though geographic location was noted to be a factor, articulation agreements were in place for those institutions who received the majority of the transfer students. The data in this study suggest that the greater the number of vocational credits accepted for transfer, the greater the number of students receiving a baccalaureate degree. Articulation agreements may be a consideration between Iowa's community colleges and four-year institutions to provide a better transition between the two institutions for AAS agricultural students.

This study found that the role of faculty as a source of transfer information and counseling at both the community college and the four-year institution is important for this AAS population. The faculty need to be knowledgeable about transfer information, process, and counseling to effectively enable AAS students to transfer successfully.

School choice was found to be based primarily upon desirable program or major at both the community college and the four-year institution. Students must have the opportunity to become knowledgeable and/or aware of
institutional offerings. The implications for guidance and transfer information from those who provide that service are evident.

Suggestions for Further Research

This research has rendered some important findings regarding AAS students who transfer to four-year institutions. Since there was a paucity of literature concerning this population, additional research with this population is still needed. Following are the researcher's suggestions for future research:

1. Four-year institutions may wish to review the graduation rates of the AAS degree transfer students in their institutions. Their studies should examine whether barriers exist that are detrimental to transfer student success. Comparisons should be made with similar institutions to determine graduate percentages for this population and then seek to answer why these differences exist.

2. Additional research on AAS degree transfer students in agriculture as well as other vocational disciplines is warranted. An extensive review of the literature failed to find similar studies of AAS transfer students. As a greater number of AAS students decide to continue their formal education, data concerning this population are needed.

3. This study needs to be expanded to include AAS agricultural transfer students from other states. Data from other states as well as comparisons between states for the AAS transfer student population would add to the literature.
4. The changing demographics of agricultural students may need to be studied to determine if the addition of more minorities and females would affect the findings.

5. Faculty at both the community college and the four-year institution were found to be important to the transfer process for this AAS agricultural population. Are faculty similarly important for other transfer populations of Associate of Applied degree students and Associate of Arts and Associate of Science student transfers?

6. This research focused on AAS students who transfer to four-year institutions immediately following their two-year degree. However, there are no data concerning those who may continue their education after being out of school for a time. Research regarding nontraditional populations returning to four-year institutions sometime after completing an AAS degree may be warranted.
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ACKNOWLEDGMENTS

I thank Dr. Larry Ebbers, my major professor, for his encouragement, patience, assistance, and friendship. Dr. Ebbers performed above and beyond the normal expectation of a major professor. Without his continual support and advice, this task could not have been accomplished.

I thank those who served on my committee for their encouragement and advice. They were Dr. Harold Crawford, Dr. Mary Huba, Dr. Daniel Robinson, and Dr. Ruth Hughes Moyer. I also thank those who were involved for part of this study but not throughout. They were Dr. James Ratcliff, who served as my major professor prior to leaving the University, and Dr. Anton Netusil and Dr. Donald McKay, who served as substitutes for the final stages of this study. Thank you also to Mrs. Bonnie Trede for typing this manuscript.

My greatest appreciation goes to my family: Cynthia, my wife, and children Timothy, Dana, Jeremy, Kendra, and Lindsay. Their understanding, patience, encouragement, and sacrifice made the completion of this project possible. I dedicate this work to them.
APPENDIX A. MAP OF COMMUNITY COLLEGES
IOWA COMMUNITY COLLEGE/REGENTS ARTICULATION AGREEMENT

It is understood that the following requirements will be met by all students transferring with an Associate in Arts degree from an Iowa Community College to any one of the three Regents institutions in Iowa, i.e., Iowa State University, University of Iowa, University of Northern Iowa:

1. The Associate in Arts degree will include a minimum of 60 semester (90 quarter) hours of courses designed and acceptable for transfer, with the understanding that 16 semester (24 quarter) hours of vocational courses could be included in the total.

2. General education courses are defined as those courses which are created to broaden student knowledge in the arts and sciences. Forty semester (60 quarter) of transfer credit hours will be required within the following general divisions:
   a. Communications - 3 semester (11 quarter) hours
   b. Humanities - 8 semester (12 quarter) hours
   c. Math and/or Science - 8 semester (12 quarter) hours
   d. Social Science - 3 semester (12 quarter) hours
   e. Distributed requirement - 8 semester (12 quarter) hours will be taken from among the above four divisions.

3. The remaining 20 semester (30 quarter) hours will be taken from arts and sciences electives designed and acceptable for transfer, with the understanding that 16 semester (24 quarter) hours of vocational courses could be taken.

4. Each student transferring an Associate in Arts degree to a Regents institution must have maintained a minimum cumulative grade point average of 2.0 on all courses acceptable for transfer.

5. It is understood that where a Foreign Language is required a student must meet this requirement either at the community college or the Regents institution of intended transfer.

6. Having fulfilled the above requirements, each student transferring with an Associate in Arts degree to a Regents institution will have met the general education requirements for the college of liberal arts or its equivalent.
7. All community college students satisfying the above requirements will be granted a waiver for freshman and sophomore level general education courses and will be enrolled at junior level status in the college of liberal arts or its equivalent at the Regents institution of intended transfer.

8. Students not completing the Associate in Arts degree could be admitted to any one of the three universities; however, this admittance would require a course by course evaluation of the students' transcript.

9. A yearly review of this initial agreement will be conducted by the following:
   
a. Dean of Arts & Sciences - Community Colleges
b. Dean of Liberal Arts - Regents Institutions
c. Dean of Student Services - Community Colleges
d. Director of Admissions - Regents Institutions

   The aforementioned representatives of each Community College and Regents Institution will meet yearly to evaluate this articulation agreement. The president of the Community College Deans and Directors Association will initiate this meeting each spring.

10. Implementation of this agreement is set for the fall of 1981 contingent upon approval of all cooperating institutions as attested to by the signatures of each of the following:

   Date
   Iowa Community Colleges
   Robert D. Benton, Iowa State Department of Public Instruction

   Date
   University of Iowa
   Howard Laster, Dean, College of Liberal Arts

   Date
   University of Northern Iowa
   John J. Kamerick, President

   Date
   Iowa State University
   Wallace A. Russell, Dean, College of Science and Humanities
ARTICULATION AGREEMENT UNDERSTANDINGS

The three Regent universities support and accept the articulation agreement. It is important that potential transfer students familiarize themselves with limitations and/or requirements operative at their respective universities.

The University of Northern Iowa has approved and will honor the articulation agreement as it is signed.

University of Iowa

The University of Iowa will honor the Articulation Agreement within the College of Liberal Arts under the conditions that the students will satisfy the language requirement (stated below) in addition to the appropriate courses mentioned in 2a of the agreement.

Language requirement to be met:

B.A. requirements: 4 terms (hours not specified) of the same language
(one year of high school is a term—one semester of college is a term)

B.S. requirements: 2 terms of the same foreign language.

Iowa State University

Students who have been awarded an AA degree from accredited two-year community colleges in Iowa prior to their first registration at Iowa State University and who have earned at least 30 (90 semester hours) of transferable credit with a cumulative grade average of at least 2.00 (C average) will have met the General Education Requirements and Basic Education Requirements in the College of Science and Humanities if they have arranged their transferable credits as to include:

1. six (6) credits of English composition (a Basic Education Requirement):

2. one-half (½) credit of Library (a Basic Education Requirement):...

3. no less than twelve (12) credits in the Humanities (Literature, History, Philosophy and Religious Studies) with at least six (6) credits in one of the disciplines included in this Group;

4. no less than two (2) credits in Verbal Communication (includes only those speaking and composition courses with main emphasis on speaking and writing proficiency development);

5. no less than eight (8) credits in Natural Sciences (Astronomy, Astrophysics, Biochemistry, Biophysics, Biology, Botany, Chemistry, Genetics, Geology, Meteorology, Microbiology, Physics, and Zoology) and three (3) credits in Mathematical Disciplines (Mathematics, Statistics and Computer Science);

6. no less than nine (9) credits from at least two different disciplines in the Social Sciences (Anthropology, Economics, Geography, Journalism, Political Science, Psychology and Sociology).

Special Notes

(a) Beginning with the 1983 Catalog the Basic Education Requirements of the College of Science and Humanities will be expanded to include a foreign language/foreign culture requirement of six (6) to twelve (12) credits.

(b) Disciplines from which courses are selected for satisfying General Education Requirements are arranged in clusters known as "Groups." There are four such Groups in terms of which the General Education Requirements of the College of Science and Humanities are scored.

NOTE: See attached list of courses available to these disciplines.

Students graduating under the 1971-72 Catalog will be required to earn a minimum of thirty-four (34) credits in courses from the Groups outside of the Group in which their major is included. These students who choose to include one year of college-level foreign language study in their program or who take six (6) credits in approved foreign culture courses will be required to take but twenty-six (26) additional transferable credits in courses from Groups outside of the Group in which their major is included. Both categories of students are expected to earn the minimum number of credits required in the Group which includes their discipline. These credits must be in disciplines other than that of their major.

Note: Students transferring from Iowa Central receive credit as follows for:

- English 101 and 101.102 (8 semester hours) at ISU: English 104; 3 hours;
- English 105; 3 hours; Speech 212; 2 hours; Library 160; Requirement fulfilled.
APPENDIX C. CORRESPONDENCE
Dear President
Community College
, IA

As a doctoral candidate at Iowa State University I am doing research for my dissertation relating to agricultural students. The specific population is those enrolled in an associate of applied science program in one of Iowa's community colleges but who later transfer to a four-year institution.

This is to inform you that I have contacted your agriculture department chairperson and asked for the names and addresses of the graduates from your agricultural programs who transferred to a four-year institution between 1985 and 1990.

I hope that this study will contribute to the knowledge about the number and satisfaction of transfer students from terminal vocational programs in agriculture. Data will be collected from faculty student files in the agricultural department, the student services office and/or from guidance/placement personnel to determine the student population and their address. All other data will be from a questionnaire mailed directly to the student. The rights and welfare of the human subjects will be protected. Confidentiality of student data will be maintain as set forth by the Privacy Act.

I wanted you to be aware of this study. The results will be available on your request.

Sincerely

Daniel W. Brown
Doctoral Student

Dr. Larry Ebbers, Chair
Professional Studies in Higher Education
April 11, 1991

______, Department Chair
Agricultural Dept.
Community College
, Iowa

Dear

I am a doctoral candidate in Professional Studies in Education at Iowa State University in Ames. The research for my dissertation pertains to agricultural students in vocational programs in Iowa's community colleges and vocational-technical education institutes who transfer to four-year institutions.

I have communicated with your chief administrator concerning this research. I need the name, current or last known address of students who after receiving your AAS degree transferred to higher educational institution in a BS program. I need this data for students who graduated from between 1975 and 1987. If you do not have this information, please inform me who in your college I should contact.

I hope that this study will contribute to the knowledge about the number and satisfaction of transfer students from vocational programs in agriculture and that as a result informed decisions can be made concerning these students.

I need this data returned not later than May 1, 1991.

Thank you in advance for your prompt action in this matter.

Sincerely

Daniel W. Brown
1311 Scenic View Drive
Iowa Falls, IA 50126
Doctoral Candidate

Larry Ebbers, Major Professor
Professional Studies in Education
N243 Lagomarcino Hall
Iowa State University
Ames, IA 50011
Information for Review of Research Involving Human Subjects
Iowa State University
(Please type and use the attached instructions for completing this form)

1. Title of Project: Factors related to the academic success of community college agricultural students who transfer to four-year institutions

2. I agree to provide the proper surveillance of this project to insure that the rights and welfare of the human subjects are protected. I will report any adverse reactions to the committee. Additions to or changes in research procedures after the project has been approved will be submitted to the committee for review. I agree to request renewal of approval for any project continuing more than one year.

Daniel W. Brown
Typed Name of Principal Investigator

Prof. Studies in Higher Ed.  N243 Lagomarcino Hall  294-1239
Department  Campus Address  Campus Telephone

3. Signatures of other investigators

Date  Relationship to Principal Investigator

4. Principal Investigator(s) (check all that apply)
   □ Faculty  □ Staff  □ Graduate Student  □ Undergraduate Student

5. Project (check all that apply)
   □ Research  □ Thesis or dissertation  □ Class project  □ Independent Study (490, 590, Honors project)

6. Number of subjects (complete all that apply)
   250 # Adults, non-students  50 # ISU student  ___ # minors under 14  ___ other (explain)
   ___ # minors 14 - 17

7. Brief description of proposed research involving human subjects: (See instructions, Item 7. Use an additional page if needed.) The Associate of Applied Science awarded by a community college is not designed for transfer. However, many students with an AAS degree do transfer. This research will examine through a student questionnaire and an institutional survey the factors related to their success, where they transferred and problems they encountered in transferring and how persisted at the four-year institution. Students identified for the study will complete the questionnaire and personnel at the four-year school will complete the institutional survey.

(Please do not send research, thesis, or dissertation proposals.)

8. Informed Consent: □ Signed informed consent will be obtained. (Attach a copy of your form.)
   □ Modified informed consent will be obtained. (See instructions, item 8.)
   □ Not applicable to this project.
9. Confidentiality of Data: Describe below the methods to be used to ensure the confidentiality of data obtained. (See instructions, item 9.)

The coding will be used to identify the subject and to link the student questionnaire to the institutional survey. Those not responding within 15 days will be sent a postcard reminder. If additional questionnaires are needed, an attempt may be made to contact those not returning the materials by telephone. The four-year institutional survey will be mailed or hand carried to the identified institutions. No one other than the principal investigator will have access to the data as recorded on the student forms. All identification will be removed at the conclusion of this study.

10. What risks or discomfort will be part of the study? Will subjects in the research be placed at risk or incur discomfort? Describe any risks to the subjects and precautions that will be taken to minimize them. (The concept of risk goes beyond physical risk and includes risks to subjects' dignity and self-respect as well as psychological or emotional risk. See instructions, item 10.)

There are no risks or discomfort for any part of this study.

11. CHECK ALL of the following that apply to your research:

☐ A. Medical clearance necessary before subjects can participate
☐ B. Samples (blood, tissue, etc.) from subjects
☐ C. Administration of substances (foods, drugs, etc.) to subjects
☐ D. Physical exercise or conditioning for subjects
☐ E. Deception of subjects
☐ F. Subjects under 14 years of age and/or ☐ Subjects 14 - 17 years of age
☐ G. Subjects in institutions (nursing homes, prisons, etc.)
☐ H. Research must be approved by another institution or agency (Attach letters of approval)

If you checked any of the items in 11, please complete the following in the space below (include any attachments):

Items A - D Describe the procedures and note the safety precautions being taken.

Item E Describe how subjects will be deceived; justify the deception; indicate the debriefing procedure, including the timing and information to be presented to subjects.

Item F For subjects under the age of 14, indicate how informed consent from parents or legally authorized representatives as well as from subjects will be obtained.

Items G & H Specify the agency or institution that must approve the project. If subjects in any outside agency or institution are involved, approval must be obtained prior to beginning the research, and the letter of approval should be filed.
Checklist for Attachments and Time Schedule

The following are attached (please check):

12. ☑ Letter or written statement to subjects indicating clearly:
   a) purpose of the research
   b) the use of any identifier codes (names, #s), how they will be used, and when they will be removed (see Item 17)
   c) an estimate of time needed for participation in the research and the place
   d) if applicable, location of the research activity
   e) how you will ensure confidentiality
   f) in a longitudinal study, note when and how you will contact subjects later
   g) participation is voluntary; nonparticipation will not affect evaluations of the subject

13. ☐ Consent form (if applicable)

14. ☐ Letter of approval for research from cooperating organizations or institutions (if applicable)

15. ☑ Data-gathering instruments

16. Anticipated dates for contact with subjects:
   First Contact: October 25, 1992
   Last Contact: December 15, 1992

17. If applicable: anticipated date that identifiers will be removed from completed survey instruments and/or audio or visual tapes will be erased:
   May 15, 1993

18. Signature of Departmental Executive Officer: Patricia M. Keith
   Date: 1/90
   Department or Administrative Unit: Professional Studies in Education

19. Decision of the University Human Subjects Review Committee:
   ☑ Project Approved   ☐ Project Not Approved   ☐ No Action Required
   Name of Committee Chairperson: Patricia M. Keith
   Date: 1/90
   Signature of Committee Chairperson: Patricia M. Keith
APPENDIX D. QUESTIONNAIRES
AND CORRESPONDENCE WITH POTENTIAL RESPONDENTS
November 2, 1992

Dear Community College Agricultural Graduate

Because you are a graduate of a community college agriculture program and you transferred to a four-year school, you have been selected to participate in a study of the factors related to academic success. The data collected in this survey will be used for my doctoral dissertation. We are seeking information concerning the transfer of vocational credits to four-year institutions.

If you choose to participate in this study, there are two parts to the data collection. One is the STUDENT QUESTIONNAIRE which will take you about thirty minutes to complete. The other is the INSTITUTIONAL SURVEY on which we need your signature for release of information. On the institutional survey, all you need to do is sign your name and write in your social security number.

All survey responses and institutional data will be kept confidential. The survey is coded only for data management. Coding will be removed when the study is completed.

The study procedures have been approved by the Iowa State University Committee on the Use of Human Subjects in Research. The results will be available upon request.

After completing the documents, please place the STUDENT QUESTIONNAIRE and the INSTITUTIONAL SURVEY (social security number and signature only) in the return envelope provided and mail. If you have any questions, please call 515-648-3359. Thank you in advance for your time and assistance in this project.

Sincerely

Daniel W. Brown
Doctoral Student

Larry Ebbers
Major Professor
STUDENT QUESTIONNAIRE

Check, circle or write in your answer.

Community College Experience:

A. Which community college did you attend?

____________________________________________________________________

Dates: From ________________ to ________________

Degree(s) received: AA ___ AS ___ AAS ___

B. Why did you attend this community college?
(check as many as apply)

___ Desirable program or major

___ Convenient geographic location

___ Reasonable cost

___ Available financial aid

___ Influenced by friends

___ Influenced by parents or family

___ Good reputation

Other (please specify) ____________________________________________

C. How many semesters were you enrolled at the community college? ______

D. Which one of the following best describes your primary educational goal when you enrolled at the two-year college? (check one only)

___ Complete a program to obtain employment

___ Complete a 2-year degree and transfer to a 4-year college or university

___ Complete 1 year and transfer to a 4-year college or university

___ Obtain skills to improve job performance

Other: __________________________________________________________
E. Your community college program or major: 

F. Your cumulative grade point average at the community college: 

G. Your status as a community college student: 
   ____ Full-time (12 or more credits/semester)  
   ____ Part-time (less than 12 credits/semester)  
   ____ Both (full-time some semesters and part-time some semesters)  

H. How satisfied were you with the community college? 

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<th>low</th>
<th>neutral</th>
<th>high</th>
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</table>

Other ___________________________ 

**Four-year School Experience:** 

A. Which college or university did you attend? 

Dates: From __________________ to __________________ 

B. When did you decide to transfer to another college or university? (indicate one only) 
   ____ During high school 
   ____ While a freshman at a community college 
   ____ While a sophomore at a community college 
   ____ After graduation from a community college
C. Which of the following were influential in your decision to continue your education? (check all that apply). For those you checked how influential were they in your decision?

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<th>Not at all influential</th>
<th>Somewhat influential</th>
<th>Influential</th>
<th>Very influential</th>
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D. Why did you decide to attend your present college or university? (mark as many as apply)

- Desirable program or major
- Convenient geographic location
- Reasonable cost
- Available financial aid
- Influenced by friends
- Influenced by parents or family
- Transfer of credits or articulation agreement
- Good reputation

Other (please list) ____________________________

E. How many semesters were you enrolled there? ________
F. Which one of the following best describes your primary educational goal when you enrolled at the four-year school? (check only one)

- Completion of a baccalaureate degree
- Complete courses to improve job performance
- Complete courses to find employment

Other: ______________________________________________

G. What is/was your program or major? _______________________

H. Who is/was your faculty advisor at the four-year school? _______________________

I. How satisfied are/were you with the four-year institution?

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</table>

J. Which of the following provided you with transfer information/assistance? (check all that apply)

For each that you checked, how satisfied were you with the assistance you received?

- Faculty at 2-year college 1 2 3 4 5
- Student services at 2-year college 1 2 3 4 5
- Faculty at 4-year college 1 2 3 4 5
- Student services at 4-year school 1 2 3 4 5
- Admissions personnel at 4-year school 1 2 3 4 5
- Other ________________________ 1 2 3 4 5
K. What is/was your status as a four-year school student?
   ___ Full-time (9 or more credits/semester)
   ___ Part-time (less than 9 credits/semester)
   ___ Both (full-time some semesters and part-time some semesters)

L. What were the problems you encountered, if any, in transfer?
   (check all that apply)
   ___ Loss of vocational credits
   ___ Loss of general education (liberal arts) credits
   ___ Lack of proper academic preparation
   ___ Lack of personal study skills
   ___ Lack of general education preparation
   Other ____________________________________________

M. Did you receive your baccalaureate? Yes ___ No ___
   If yes, from where? ________________________________
   If yes, what year did you receive your degree? ______

N. If you did not complete degree, why did you leave college?
   ___ Academic status
   ___ Financial reasons
   ___ Job opportunity
   ___ Health reasons
   ___ Other (please specify) __________________________
   ___ Still in college working on degree
Demographic Information:

A. Gender: Male ____  Female ____

B. Marital status:
   At community college:
   Single ____  Married ____  Divorced ____
   At four-year college or university:
   Single ____  Married ____  Divorced ____

C. Current job status:
   ___ Employed full-time in area of college major
   ___ Employed part-time in area of college major
   ___ Employed full-time but not in area of college major
   ___ Employed part-time but not in area of college major
   ___ Seeking employment
   ___ Other ______________________________

D. Additional comments or remarks you would like to make:

I appreciate the time you have taken to complete this questionnaire. Be sure you have signed and written your social security number on the INSTITUTIONAL SURVEY. Place both documents in the prepaid envelope and put them in the mail. Thank you for your input.
INSTITUTIONAL SURVEY

Student Permission.

I give my permission to Daniel Brown for access to my student records to obtain data for his study of the factors related to the academic success of community college agricultural students who transfer to four-year institutions.

Social Security Number: _____ - _____ - _____

Signature: ______________________________________

To be completed by College or University personnel.

Program or major at your institution: __________________________

Total number of semester credits transferred from community college: ________ Number of vocational credits: ________

Name(s) of the vocational course(s) transferred: (check one)

___________________________ Direct _______ Free Elective ______

___________________________ Direct _______ Free Elective ______

___________________________ Direct _______ Free Elective ______

___________________________ Direct _______ Free Elective ______

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___________________________ Direct _______ Free Elective ______

(Use back if more space is needed)

Number of semesters enrolled at your institution: ___________

Number of credits completed at your institution: _____________

Grade point average attained at your institution: _____________

Current Student Status:

Degree granted on: ____________________________

Student currently enrolled in: ___________ semester hours

Student exited from institution on: _______________________

Is there an articulation agreement for AAS agriculture students between institutions? Yes _____ No _____

If yes, please enclose a copy of that document.

I appreciate the time you have taken to complete this questionnaire. Please place it in the prepaid envelope and drop it in a mailbox. Again, many thanks.
Dear Community College Ag Graduate

A few weeks ago I mailed a letter to you containing a survey and questionnaire about your college career. I realize that this is a busy time for you and that you may have set it aside. Please complete it and return that to me at your earliest convenience so that you may be a part of the database. Thank you for your prompt attention in this matter.

Sincerely,

Daniel W. Brown, Graduate Student
Dear Sir

I am working on a study of community college graduates from an agriculture program who transferred to your institution after receiving an AAS degree. The data collected in this survey will be used for a doctoral dissertation.

I need information from you to supplement the data supplied by the student respondents. Please use the enclosed form for each student and complete the survey for each. Your assistance in this project is greatly appreciated.

Please be advised that I have received permission from each student respondent. All survey responses will be kept confidential. The social security number is used only for data collection for this study. Confidentiality is in adherence with the American Psychological Association ethical standards. The social security number will be removed when the survey is received.

The study procedures have been approved by the Iowa State University Committee on the Use of Human Subjects in Research. The results will be available upon request.

After completing the survey, please place it in the return envelope provided and mail. If you have any questions, please call 515-648-3359. Thank you in advance for your time and assistance in this project.

Sincerely

Daniel W. Brown
Doctoral Student

Larry Ebbers
Major Professor
APPENDIX E. TABLES
Table 14. Iowa community college AAS agricultural students by program and year of graduation

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