

EVALUATING THE EFFECTIVENESS OF THE SPACETEC NATIONAL
AEROSPACE TECHNICIAN EDUCATION PROGRAM

by

Gregory N. Cecil

A Space Operations Management Graduate Capstone Project
Submitted to the Worldwide Campus
In Partial Fulfillment of the Requirements of the Degree of Master of Aeronautical
Science

Embry-Riddle Aeronautical University
World Wide Campus
Space Coast Center
May 2009

PROJECT REVIEW COMMITTEE

Evaluating the Effectiveness of the SpaceTEC National Aerospace Technician Education Program

by

Gregory N. Cecil

This Space Operations Management Capstone Project Proposal was prepared under the directions of the candidate's Project Review Committee Member, Mr. Kevin Allen, Adjunct Professor, Space Coast Campus, and the candidate's Project Review Committee Chair, Dr. Charles J. Allen, Associate Professor, Worldwide Campus, and has been approved by the Project Review Committee. It was submitted to the Worldwide Campus in partial fulfillment of the requirements for the degree of Master of Aeronautical Science.

PROJECT REVIEW COMMITTEE:

Kevin Allen, MAS
Committee Member

Charlie Joe Allen, Ed. D.
Committee Chair

CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that the appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed,

Gregory N. Cecil

ACKNOWLEDGEMENTS

The author would like to thank Frank Margiotta, Principal Investigator, Robert Ward, SpaceTEC Member Colleges, and the entire SpaceTEC staff for their cooperation and enthusiastic support. The author would like to thank Dr. Al Koller and Mr. James Kennedy for their mentorship and unwavering support. The author would also like to thank the Gemini Class of 2003 for their friendship and inspiration. This author also has a large debt of gratitude to Linda D. Ryan for her encouragement and patience. This author has been and always will be thankful for her loving presence, for she truly enriches his life and soul.

ABSTRACT

Researcher: Gregory N. Cecil

Title: Evaluating the Effectiveness of the SpaceTEC National Aerospace
Technician Education Program

Institution: Embry-Riddle Aeronautical University

Degree: Masters of Aeronautical Science: Space Operations Management

Year: 2009

The purpose of this study was to evaluate the effectiveness of the SpaceTEC National Aerospace Technician Education Program by determining the percentage of graduated students that were actually hired into the aerospace industry while they were students or within one year after graduation. Data was gathered through a survey of the eligible graduates from the various schools within SpaceTEC that offered the core curriculum. The results were inconclusive due to difficulties in getting enough graduates to participate in the study.

TABLE OF CONTENTS

PROJECT REVIEW COMMITTEE	ii
ACKNOWLEDGEMENTS	iv
ABSTRACT	v
LIST OF TABLES	ix
LIST OF FIGURES	x
CHAPTER I	1
INTRODUCTION	1
Background of the Problem	1
Researchers Work Role and Setting	3
Statement of the Problem	5
Sub-Problems	5
Assumptions	6
Limitations	6
Delimitations	6
Definition of Terms	7
Acronyms	7
CHAPTER II	9

REVIEW OF RELEVANT LITERATURE AND RESEARCH	9
Chapter Two Introduction	9
What is a Postsecondary School?	9
Advantages of Attending a Postsecondary School	10
Postsecondary Technical Curriculum	12
Job Placement	13
Hypotheses	15
CHAPTER III	16
PROPOSED RESEARCH METHODOLOGY	16
Research Model	16
Treatment of Data	17
CHAPTER IV	23
RESULTS	23
CHAPTER V	27
DISCUSSION	27
Hypothesis One	27
Hypothesis Two	29
Hypothesis Three	30
Hypothesis Four	30
CHAPTER VI	31

CONCLUSIONS	31
CHAPTER VII	34
RECOMMENDATIONS	34
REFERENCES	36
APPENDIX A	40
BIBLIOGRAPHY	40
APPENDIX B	44
INTRODUCTION LETTER TO MEMBER COLLEGES	44
APPENDIX C	46
DATA COLLECTION DEVICE	46
APPENDIX D	52
SURVEY MONKEY RAW DATA	52
APPENDIX E	58
FOLLOW UP EMAIL TO MEMBER COLLEGES FROM FRANK MARGIOTTA, PRINCIPLE INVESTIGATOR OF SPACETEC	58
APPENDIX F	60
RESEARCHERS FOLLOW UP EMAIL TO THE MEMBER COLLEGES	60

LIST OF TABLES

TABLE 1 SPACETEC MEMBER COLLEGES AND AEROSPACE CENTERS 2

TABLE 2 MEDIAN ANNUAL EARNINGS OF FULL-TIME, FULL-YEAR WAGE
AND SALARY WORKERS AGES 25–34, BY EDUCATIONAL ATTAINMENT,
SEX, AND RACE/ETHNICITY: SELECTED YEARS, 1980–2006 (IES
NATIONAL CENTER FOR EDUCATION STATISTICS, 2008) 11

TABLE 3 EXAMPLE OF SURVEY RESPONSE SUMMARY TABLE 17

TABLE 4 EXAMPLE OF MEMBER COLLEGE PLACEMENT PERCENTAGES 21

TABLE 5 SURVEY RESPONSE SUMMARY TABLE 23

TABLE 6 HYPOTHESIS ONE DATA 28

TABLE 7 HYPOTHESIS TWO DATA 29

LIST OF FIGURES

FIGURE 1. SPACETEC LOCATIONS (SPACETEC, 2007)..... 1

FIGURE 2 GEMINI CLASS THEN AND NOW 2003-2007 (TANNER, 2007) 4

FIGURE 3 STUDENT ENROLLMENT IN CAREER AND TECHNICAL
EDUCATION PROGRAMS, PY 1999-2005 (U.S. DEPARTMENT OF
EDUCATION OFFICE OF VOCATIONAL AND ADULT EDUCATION, 2008) 13

FIGURE 4 STATE PLACEMENT PERCENTAGES AVERAGE FOR 2004-2005.
STUDENTS WHO WENT ON TO PURSUE A HIGHER DEGREE OR JOINED
THE MILITARY WERE CONSIDERED SUCCESSFULLY "PLACED" IN THIS
STUDY. SOME STATES DIVIDED 18 YEAR OLD AND ADULT STUDENTS
IN THEIR REPORTS. (U.S. DEPARTMENT OF EDUCATION OFFICE OF
VOCATIONAL AND ADULT EDUCATION, 2008)..... 14

FIGURE 5 SURVEY MONKEY RAW DATA PAGE 1..... 52

FIGURE 6 SURVEY MONKEY RAW DATA PAGE 2..... 53

FIGURE 7 SURVEY MONKEY RAW DATA PAGE 3..... 54

FIGURE 8 SURVEY MONKEY RAW DATA PAGE 4..... 55

FIGURE 9 SURVEY MONKEY RAW DATA PAGE 5..... 56

FIGURE 10 SURVEY MONKEY RAW DATA PAGE 6..... 57

CHAPTER I
INTRODUCTION
Background of the Problem



Figure 1 SpaceTEC Locations (SpaceTEC, 2007)

SpaceTEC is a National Science Foundation Center of Excellence for Aerospace Technical Education that was formed in 2002 from the former Community Colleges for Innovative Technology Transfer (CCITT). SpaceTEC is currently based at Cape Canaveral Air Force Station (CCAFS). SpaceTEC has 11 partner colleges based in 8

states near various National Aeronautics and Space Administration (NASA) or Department of Defense (DOD) facilities which have a large concentration of aerospace companies. (SpaceTEC, 2007)

Table 1 SpaceTEC Member Colleges and Aerospace Centers

<i>Name of College</i>	<i>State</i>	<i>Nearby Aerospace Center(s)</i>
Allan Hancock College	CA	Vandenberg Air Force Base
Antelope Valley College	CA	Dryden Flight Research Center
Brevard Community College	FL	Kennedy Space Center Patrick Air Force Base Cape Canaveral Air Force Base
Calhoun Community College	AL	Marshall Space Flight Center
Community College of the Air Force	AL	Maxwell Air Force Base
Cuyahoga Community College	OH	Glenn Research Center
Dona Ana Community College	NM	White Sands
Edmonds Community College	WA	Boeing
Embry Riddle Aeronautical University	FL	Kennedy Space Center Patrick Air Force Base Cape Canaveral Air Force Base
Tarrant County College District	TX	Carswell Air Force Base
Thomas Nelson Community College	VA	Langley Research Center

SpaceTEC member colleges collectively enroll over 700 students annually. (Hinkle, et al., 2008) During its first six years (2002-2008), SpaceTEC and its member colleges have graduated an unknown number of students with 2 year degrees. A number of those graduates have entered the aerospace workforce to work in various aerospace fields ranging from aircraft manufacturers to Space Shuttle processing. (SpaceTEC, 2007)

SpaceTEC also has developed and is the testing agent for a National Aerospace Technician Certification (NATC). The opportunity to test for NATC is open to all graduates of the program and to aerospace technicians already in the workforce that are not graduates or participates in the program. For the latter group, successful passing of the NATC will result in college credits being applied towards the college degree if they choose to enroll at some member colleges. This certification is recognized by the Federal Aviation Administration (FAA). (SpaceTEC, 2007)

Researchers Work Role and Setting

The author of this paper is a 2003 graduate of the program. His class, self named the Gemini Class, was the second class to go through the program and consisted of 12 members at the time of graduation. Six members of the Gemini Class were already employed in the aerospace industry at CCAFS and Kennedy Space Center (KSC). The other six members, including the author, were not employed in the aerospace industry nor had any aerospace experience prior to entering the program. Within three months of graduation, the six inexperienced graduates were hired into the aerospace workforce at CCAFS and KSC.

As of 2008, all twelve members of the Gemini Class now work for six different aerospace companies in varied areas such as Quality, Configuration Management, Thermal Protection System (TPS), Space Shuttle Main Engines (SSME), Range Communications, Calibration Lab, Logistics, and Commercial Orbital Transportation Services projects (COTS). At least six members of the Gemini Class have furthered their education by pursuing Bachelor Degrees and at least two have pursued or obtained a Masters level degree. One graduate is now an instructor for SpaceTEC. At least three members of the Gemini Class have obtained their NATC.



Figure 1 Gemini Class Then and Now 2003-2007 (Tanner, 2007)

The ability of the Gemini Class to transfer their education into actual aerospace jobs is routinely touted as a success story for SpaceTEC and its program. But, is the Gemini Class success typical? Are all classes that go through the SpaceTEC program as successful? No measurement or data, to this author's knowledge at the start of this study, had been gathered to determine how many graduates of the program have found employment in the aerospace industry or the type of positions hired for.

Statement of the Problem

This researcher proposes to evaluate the effectiveness of a two year degree based on the SpaceTEC Aerospace Technical Education Core Curriculum by determining the percentage of graduated students who were actually hired into the aerospace industry while students or within one year after graduation.

Sub-Problems

The first sub-problem is to investigate the degree to which hire or placement rates for inexperienced and experienced graduates vary.

The second sub-problem is to compare hire or placement rates of all SpaceTEC graduates, regardless of the experience level, between the member colleges.

The third sub-problem is to compare hire or placement rates of all SpaceTEC graduates, regardless of the experience level, against the national average.

The fourth sub-problem is to find out the type of positions graduates are hired for within the aerospace industry and determine if the positions relate to their degree.

Assumptions

The survey instrument is valid and reliable.

Graduates of the program are actively seeking aerospace positions after graduation.

Limitations

Aerospace job market fluctuations cannot be predicted nor controlled.

Member colleges may refuse to forward on questionnaires or provide contact information for graduates.

Graduates may refuse to fill out questionnaires, incompletely fill them out, or return them past the due date that was set.

Though SpaceTEC does not guarantee placement, some technical schools included in past studies may guarantee placement for their students without it being mentioned in that particular study.

Older studies of other trade/technical schools may not break down students into experienced and inexperienced.

National studies data may not have accurate data to properly determine the national average for job placement.

National studies may have a looser definition of job placement than this study does.

Delimitations

Graduates who are already employed in the aerospace industry at the time of enrollment in the program will not be counted as a positive result.

Graduates hired more than one year after graduation will not be counted as a positive result.

Students that have dropped out of the program prior to graduation, though they may have been hired in an aerospace position, will not be counted in the population.

Definition of Terms

Placement – The task of the school arranging employment for the student.

Postsecondary school – Refers to a non-compulsory school that traditionally follows compulsory secondary school (more commonly known as high school).

Postsecondary schools are considered undergraduate schools and can be 2 or 4 year colleges or schools with specialized curriculum such as vocational or business. The more common name for postsecondary schools is college.

Self serve placement – The task of the student pursuing and obtaining employment on their own.

Technical Curriculum – An educational curriculum where a student is taught a particular or series of skill sets to work either a specialized job or work in a specialized field. This type of curriculum can be taught by Vocational, Trade, Technical, 2 year, or 4 year postsecondary schools.

Acronyms

CAFB – Carswell Air Force Base

CCAFS – Cape Canaveral Air Force Station

CCITT – Community Colleges for Innovative Technology

COTS – Commercial Orbital Transportation Services

DFRC – Dryden Flight Research Center

DOD – Department of Defense

FAA – Federal Aviation Administration

FERPA – Family Educational Rights and Privacy Act

GRC – Glenn Research Center

KSC – Kennedy Space Center

LRC – Langley Research Center

MAFB – Maxwell Air Force Base

MSFC – Marshall Space Flight Center

NASA- National Aeronautics and Space Administration

NATC – National Aerospace Technician Certification

PAFB – Patrick Air Force Base

SSME – Space Shuttle Main Engine

TPS – Thermal Protection System

VAFB – Vandenberg Air Force Base

CHAPTER II

REVIEW OF RELEVANT LITERATURE AND RESEARCH

Chapter Two Introduction

This chapter will explore relevant data from other studies laying the groundwork for the proposed study of SpaceTEC hire rates for their graduates. Postsecondary schools and the different types of those schools will be briefly explored. The advantages of attending a postsecondary school will be discussed. The differences between guaranteed job placement and self serve placement done by the graduate will be covered. Data concerning placement and or hire rates among technical schools in the nation will be discussed. Finally, a hypothesis will be proposed for the study.

What is a Postsecondary School?

Unlike primary and secondary schools, which are compulsive, postsecondary schools are non-compulsive schools of higher learning. These types of schools usually award some form of degree, certificate, or diploma at the end of the established curriculum. Postsecondary schools include universities, colleges, junior or community colleges, institutes of technology, and teacher training schools that provide undergraduate education programs. Graduate schools such as law, theology, medicine, business, etc also fall under the postsecondary realm. (Encyclopædia Britannica, 2008)

To enter a postsecondary school, it is usually assumed that the student has completed a secondary education program resulting in a diploma from that institution and is at least 18 years of age. (Encyclopædia Britannica, 2008) Recently though, there are programs allowing secondary students to start their postsecondary education while still students

within the secondary school system and under the age of 18. These programs, which have been enacted by 38 states as of 2004, are known by names such as “dual enrollment”, “dual credit”, “joint enrollment”, or “concurrent enrollment.” (Kleiner, Lewis, & Greene, 2005)

Advantages of Attending a Postsecondary School

People who attend postsecondary schools are more likely to be employed. Ninety one percent of two year graduates and ninety five percent of four year graduates were employed in 2000 compared to only eighty percent of high school dropouts.

Postsecondary graduates were also more likely to be employed fulltime. (Bailey, Kienzl, & Marcotte, 2004) Unemployment rates for four year graduates would consistently run lower than the national average. Within five years of graduation, nine out of ten full time employed graduates of postsecondary schools would also have health insurance and retirement benefits. (Choy, Bradburn, & Carroll, 2008)

Postsecondary schooling leads to more money. The thinking that education is the greatest investment a person can make is backed up by many empirical studies that show a causal effect that a postsecondary education can make on a salary. (Bailey, Kienzl, & Marcotte, 2004) Compared to a high school or secondary school graduate, salaries for a two year graduate of a postsecondary school run fifteen to twenty five percent higher (Bailey, Kienzl, & Marcotte, 2004) while a four year graduate can have salaries running sixty percent higher. (Choy, Bradburn, & Carroll, 2008)

Table 2 Median annual earnings of full-time, full-year wage and salary workers ages 25–34, by educational attainment, sex, and race/ethnicity: Selected years, 1980–2006 (IES National Center For Education Statistics, 2008)

[In constant 2006 dollars]							
Educational attainment...	1980	1985	1990	1995	2000	2005	2006
Total	\$36,700	\$37,400	\$34,700	\$33,100	\$35,100	\$34,900	\$35,000
Educational attainment							
Less than high school							
Less than high school	29,400	26,200	24,100	21,400	23,400	22,700	22,000
High school diploma or equivalent							
High school diploma or equivalent	34,200	31,900	29,700	27,500	29,300	28,800	29,000
Some college							
Some college	36,700	37,500	34,700	30,800	32,800	32,500	31,400
Associate's degree							
Associate's degree	—	—	—	33,100	35,100	35,100	34,000
Bachelor's degree or higher							
Bachelor's degree or higher	44,000	46,800	45,200	43,700	46,800	45,400	45,000
Bachelor's degree							
Bachelor's degree	—	—	—	41,000	45,700	42,100	43,500
Master's degree or higher							
Master's degree or higher	—	—	—	52,900	52,700	51,600	50,000

Postsecondary Technical Curriculum

Though employers are now requiring more extensive educational backgrounds from their prospective and current employees (Answers Corporation, 2006), they prefer to hire employees who can start with little or no extensive job training. (Bailey, Kienzl, & Marcotte, 2004) This is where occupational or technical programs come into good use.

Technical programs offer academic, technical knowledge, and skills (U.S. Department of Education Office of Vocational and Adult Education, 2008) that prepare a student for work by offering a more narrow education compared to academic programs that normally provide a much broader education. (Bailey, Kienzl, & Marcotte, 2004) Technical programs can be taught by vocational, trade, two year, or four year postsecondary institutions, but the most common institution is the two year community college.

More than half of the students who will attend college after secondary school will enroll in a two year postsecondary community college. The majority of those students will in turn take a technical curriculum. (Bailey, Kienzl, & Marcotte, 2004) Over 14 million students nationwide enroll each year in technical education programs. (U.S. Department of Education Office of Vocational and Adult Education, 2008)

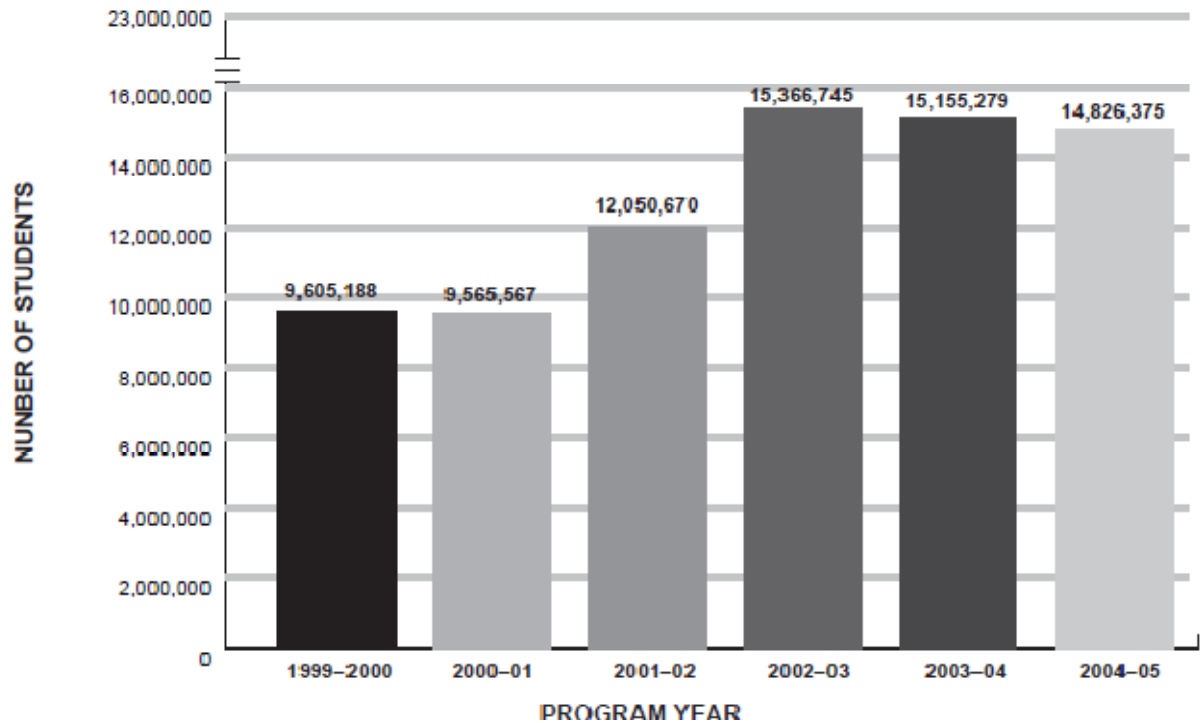


Figure 2 Student Enrollment in Career and Technical Education Programs, PY 1999-2005
(U.S. Department of Education Office of Vocational and Adult Education, 2008)

Job Placement

As of the 2004-2005 school year, 713,066 people graduated with a two year degree. (IES National Center For Education Statistics, 2008) Ninety one percent of students who enroll in technical programs end up employed full time according to a study done in 2004 (Bailey, Kienzl, & Marcotte, 2004), while another study done in 2005 suggests that the national placement rate is more likely around 85.36% (though they freely admit there are data quality issues with their study). (U.S. Department of Education Office of Vocational and Adult Education, 2008)

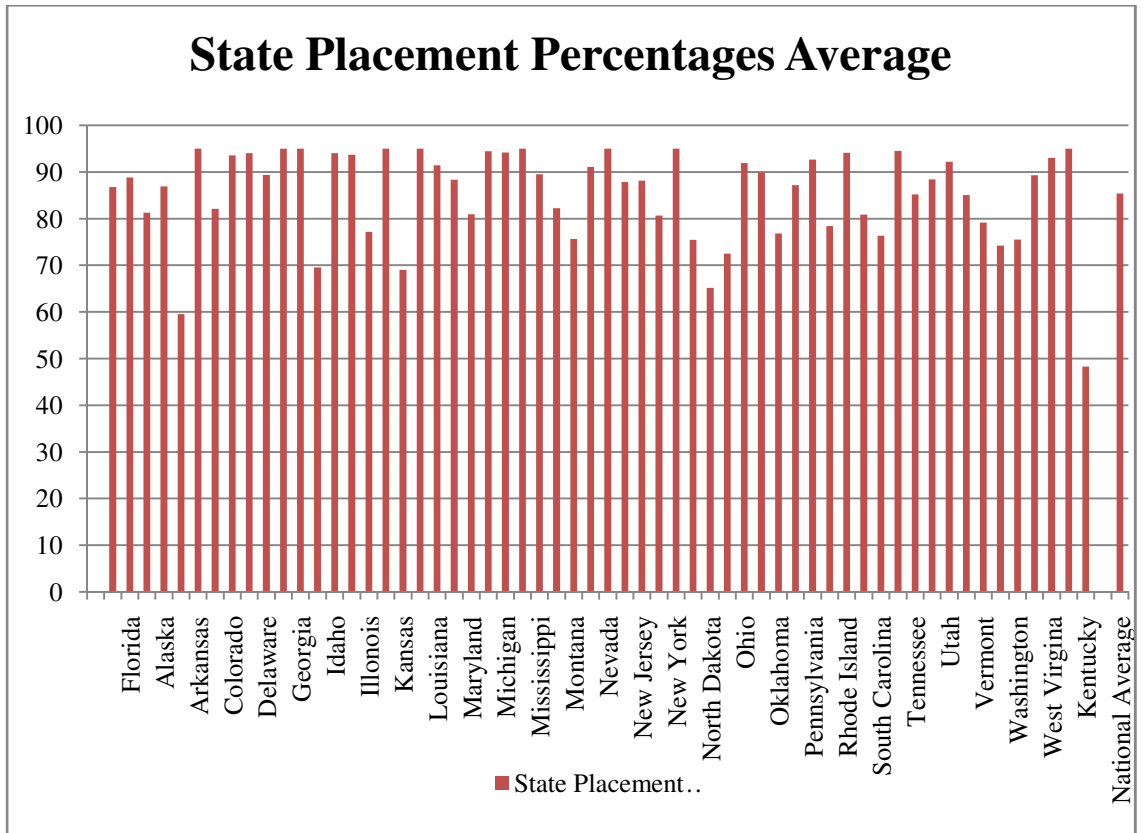


Figure 3 State Placement Percentages Average for 2004-2005. Students who went on to pursue a higher degree or joined the military were considered successfully "placed" in this study. Some states divided 18 year old and Adult Students in their reports. (U.S. Department of Education Office of Vocational and Adult Education, 2008)

It is also unknown if job placement was guaranteed by the schools or was self serve, i.e. students sought out and applied for jobs on their own initiative. It is more likely a combination of school sponsored and self serve job placement. It is also unknown if all students that were placed into a job actually graduated from their respective programs. Some data also counted successful placement if a student continued their studies towards

a higher degree or joined the military. (U.S. Department of Education Office of Vocational and Adult Education, 2008)

SpaceTEC and its eleven member colleges enroll over 700 students in their technical programs annually. (Hinkle, et al., 2008) If SpaceTEC is in step with the national average of eighty five to ninety one percent job placements, then their job placement average should be around 535 to 637 students per year.

Hypotheses

Hypothesis One – The hire or placement rates for inexperienced and experienced graduates will significantly vary.

Hypothesis Two – The hire or placement rates for all SpaceTEC graduates, regardless of the experience level, will not significantly vary among SpaceTEC member colleges.

Hypothesis Three – The hire or placement rates for graduates of SpaceTEC core curriculum will be comparable to the national averages of 85% to 91%.

Hypothesis Four – The positions for which graduates are hired in the aerospace industry will be related to their degree.

CHAPTER III

PROPOSED RESEARCH METHODOLOGY

Research Model

The research method is a descriptive model. A survey was taken and the answers given by the survey population was tabulated, analyzed, and compared to similar studies.

Survey Population

The survey population consisted of graduates of a two year degree program that used the SpaceTEC core curriculum. These graduates came from the one of the seven eligible SpaceTEC member colleges. These graduates may have had previous aerospace experience, but those graduates who were already employed in the aerospace field at the time of enrollment in a SpaceTEC related degree program were not be eligible and their answers was removed from the survey data by use of filtering or screening questions since they were already “placed” in their field. Graduates that were hired or placed more than one year after graduation were counted as not being placed or hired, while graduates that were hired or placed during school or within one year after graduation was counted as hired or placed. Students that dropped out of the SpaceTEC related degree program prior to graduation were not counted even if they were hired prior to or after dropping out.

Sources of Data

The member colleges of SpaceTEC were asked by letter to provide the actual number of SpaceTEC graduates for the years 2002-2008 and the name of the degree programs that use the SpaceTEC core curriculum. The colleges were also asked to provide contact

information for these graduates or to take the responsibility themselves to contact these graduates on the researcher's behalf for survey purposes.

The Data Collection Device

An eleven question survey was designed to gather data from the survey population. The survey was limited to eleven questions in order to make it more likely that the survey population would complete the survey. A copy of the survey instrument with cover letter is in Appendix C.

Procedures

The survey was posted on www.surveymonkey.com and each graduate contact address obtained was sent the hyperlink to the survey. Each graduate could only take the survey one time. The survey remained posted for a seventeen day period before being closed. Only the researcher and the website staff had access to the data. After the survey was closed, the data was downloaded for the researcher to analyze.

Treatment of Data

The data collected by the survey was summarized in a table similar to Table 3.

Table 3 Example of Survey Response Summary Table

Questions 1-6 are used to validate that the survey taker is qualified for the study.														
Survey		Response												
Item #		Summary												
Question		College:	A	B	C	D	E	F	G	H	I	J	K	L

1																	
	Frequency:																
Question 2	Response:	Yes	No														
	Frequency:																
Question 3	This question is a screening question. No data summarized.																
Question 4	Response:	Yes	No	Quit Program and/or school.	I am still in the program.												
	Frequency:																
Question 5	This question is a screening question. No data summarized.																
Question 6	Response:	Yes	No														
	Frequency:																
Questions 7-9 Measures Previous Experience and Placement Success																	
Survey Item #	Response Summary																
Question 7	Response:	Yes	No														
	Frequency:																
Question 8	Response:	Yes	No														

	Frequency:			
Question 9	Response:	Yes	No	N/A
	Frequency:			
Questions 10-11 are general classification questions. No data summarized.				

The first sub-problem was to investigate the degree to which hire or placement rates for inexperienced and experienced graduates varied. Hypothesis One – The hire or placement rates for inexperienced and experienced graduates will significantly vary. This data came from questions seven and eight answered by the qualified graduates. A Difference of Proportions test was used to determine if the null hypothesis showed that there is no significant difference between experienced and inexperienced placement is true. The test was conducted at the 0.05 level of significance.

- Experienced and placed sample = Total number of “Yes” answers to both questions seven and eight divided by the total number of responses.
- Inexperienced and placed sample = Total number of graduates who answered “No” to question seven and “Yes” to question eight divided by the total number of responses.
- Experienced and not placed = Total number of graduates who answered “Yes” on question seven and “No” on question eight divided by total number of responses.

- Inexperienced and not placed = Total number of graduates who answered “No” on both questions seven and eight divided by total number of responses.

The second sub-problem was to compare hire or placement rates of all SpaceTEC graduates, regardless of the experience level, between the member colleges. Hypothesis Two – The hire or placement rates for all SpaceTEC graduates, regardless of the experience level, will not significantly vary among SpaceTEC member colleges. This data was taken from questions one, and eight answered by the qualified graduates. A Chi-Square Goodness of fit test was conducted at the 0.05 level of significance to test the null hypothesis that the distribution of placed graduates is uniform. If the null was rejected, the conclusion will be that some schools place significantly more graduates than others. The results were presented in a table similar to Table 4.

Table 4 Example of Member College Placement Percentages

Member College	Percentage of Graduates Placed Expressed as a Number 0-100
Allan Hancock College	
Antelope Valley College	
Brevard Community College	
Calhoun Community College	
Community College of the Air Force	
Cuyahoga Community College	
Dona Ana Community College	
Edmonds Community College	
Embry-Riddle Aeronautical University	
Tarrant County College District	
Thomas Nelson Community College	

The third sub-problem was to compare hire or placement rates of all SpaceTEC graduates, regardless of the experience level, against the national average. Hypothesis Three – The hire or placement rates for graduates of SpaceTEC core curriculum will be comparable to the national averages of 85% to 91%. This data was taken from question eight as answered by the qualified graduates. A sample proportion would be the sum of the “Yes” answers to question eight divided by the total number of responses qualified

graduates. A 95% confidence interval was constructed for the proportions of the sample population.

- If the confidence interval overlaps the national Confidence Interval (85%, 91%) then the placement rate for SpaceTEC will be the same as the national average.
- If the confidence interval is below the national confidence interval (85%, 91%), then the placement rate for SpaceTEC is lower than the national average.
- If the confidence interval is above the national confidence interval (85%, 91%), then the placement rate for SpaceTEC is above the national average.

The fourth sub-problem was to investigate the type of positions for which graduates are hired within the aerospace industry and determine if the positions relate to their degree. Hypothesis Four – The positions that graduates are hired for in the aerospace industry will be related to their degree. This data was taken from question nine as answered by the qualified graduates. A sample proportion of the ratio of the number of “Yes” answers divided by the total number of responses to question nine was calculated. A 95% confidence interval was constructed. If the confidence interval is above 50%, then it can be concluded that the majority of SpaceTEC graduates who are placed are hired for positions related to their degrees.

CHAPTER IV

RESULTS

Table 5 Survey Response Summary Table

Questions 1-6 was used to validate that the survey taker is qualified for the study.						
Survey Item #						
Question 1	What was the name of the college you attended?					
Allan Hancock College	Antelope Valley College	Brevard Community College	Calhoun Community College	Community College of the Air Force	Cuyahoga Community College	Tarrant County College District
2	1	23	0	1	1	1
Question 2	Were you in a degree program at your school that was affiliated with SpaceTEC and its core courses?					
	Yes	No				
	26	2				
Question	What was your major or degree			This question was a		

3	program?	screening question. No data was summarized.
---	----------	---

Question 4	Did you graduate?	
------------	-------------------	--

	Yes	No	Quit Program and/or school.	I am still in the program.
	25	1	0	1

--	--	--	--	--

Question 5	If yes, what year did you graduate?	This question was a screening question. No data was summarized.
------------	-------------------------------------	---

Question 6	Were you employed by an aerospace company AT THE TIME OF ENROLLMENT in your degree program?
------------	---

	Yes	No
	4	22

Questions 7-9 Measured Previous Experience and Placement Success	
--	--

Question 7	Have you ever worked for an aerospace company PRIOR TO ENROLLING in the SpaceTEC program?
------------	---

	Yes	No
	3	18

Question 8: Were you hired by an aerospace company prior to graduation or within one year after graduation?

	Yes	No
	19	1

Question 9: If yes, does your job relate to your degree or certificate you earned?

	Yes	No	N/A
	17	1	3

Questions 10-11 were general classification questions. No data was analyzed.

Question 10: How old were you at graduation?

	18-25	26-30	31-35	36-40	41-45	46-50	51-55	56-70
	7	1	2	4	1	3	3	0

Question: What is your gender?

11			
	Female	Male	
	4	16	

CHAPTER V

DISCUSSION

Of the eleven member colleges, only seven colleges actually used the SpaceTEC core curriculum and/or had graduates for the time period of 2002-2008 and therefore qualified for the study. The colleges were, Allan Hancock College, Antelope Valley College, Brevard Community College, Calhoun Community College, Community College of the Air Force, Cuyahoga Community College, and Tarrant County College District.

Calhoun Community College was the only college to provide the number of graduates in the 2002-2008 period which was 47 graduates. (Swindell, 2007) No other eligible college provided graduate numbers. Due to the lack of graduate information a proportional sample size could not be calculated.

Thirty one people answered the survey. Two of the people who answered the survey indicated they did not attend any of the SpaceTEC member colleges and it is unknown how they obtained the link to the survey. Of those thirty one, only twenty one people were eligible for the study after the first six screening questions were completed. Those twenty one graduates were allowed to finish the survey.

Hypothesis One

Hypothesis one stated that the hire or placement rates for the inexperienced and experienced graduates would significantly vary. The null hypothesis would have had no significant variance. The data was to come from questions seven and eight. Due to the small sample size a Difference of Proportions test was not successful using the Statdisk

program. Instead, the number of answers were tallied and divided by the total number of responses to obtain the sample statistics. No conclusions can be drawn about the target population due to the small sample.

Table 6 Hypothesis One Data

Experienced and Placed		Inexperienced and Placed	
Experienced	3	Inexperienced	18
Placed	19	Placed	19
Total number of responses	41	Total number of responses	41
Percentage	53.66%	Percentage	90.24%
Experienced and NOT Placed		Inexperienced and NOT Placed	
Experienced	3	Inexperienced	18
NOT Placed	1	NOT Placed	1
Total number of responses	41	Total number of responses	41
Percentage	9.76%	Percentage	46.34%

Nineteen graduates answered as placed. Only three answered as being experienced compared to the eighteen who indicated they were inexperienced graduates. One experienced and one inexperienced graduate were not placed and one graduate did not answer question eight concerning placement. Since inexperienced graduates outnumbered experienced graduates by a six to one ratio, there is insufficient data to prove or disprove the first hypothesis.

Hypothesis Two

Hypothesis Two stated that the hire or placement rates of all SpaceTEC graduates, regardless of experience level, will not significantly vary among the SpaceTEC member colleges. The null hypothesis would show a significant variance between the schools. This was to be determined by using a Chi-Square Goodness of Fit test.

Table 7 Hypothesis Two Data

Member College	Number that were placed	Number that responded	Percentage of Graduates Placed
Allan Hancock College	0	2	0%
Antelope Valley College	0	1	0%
Brevard Community College	18	23	78%
Calhoun Community College	0	0	0%
Community College of the Air Force	0	1	0%
Cuyahoga Community College	1	1	100%
Tarrant County	0	1	0%

College District			
------------------	--	--	--

There was insufficient data to run a Goodness of Fit test to determine if the null hypothesis was to be rejected or not. Four of the seven schools had only one graduate respond and depending on their answer concerning placement, they scored for their school either a 100% or 0% placement rate. Calhoun Community College had no respondents giving them a 0% placement rate though it has been stated earlier they had graduated 47 students between the years of 2002 to 2008. Brevard Community College had the most graduates respond but the data is suspect as will be discussed in the next chapter.

Hypothesis Three

Hypothesis three stated that the hire or placement rates for graduates of the SpaceTEC core curriculum will be comparable to the national averages of 85% to 91%. The data was taken from question eight. The number of successes (19) was divided by the number of respondents (20) resulting in a placement rate of 95%. The limited number of responses suggests that SpaceTEC placement rates are above the national average overall.

Hypothesis Four

Hypothesis four stated that the positions the placed graduates will be related to their degree. This data was taken from question nine of the survey. Out of 21 responses, 17 or 81% answered yes that their job they were hired for related to their degree. Therefore, the limited data appears to support the hypothesis (However, due to the small sample, a test for statistical significance could not be conducted.).

CHAPTER VI

CONCLUSIONS

There were too few respondents to the survey to adequately prove or disprove the four hypothesized. One limitation listed in Chapter One, member colleges may refuse to forward on questionnaires or provide contact information for graduates, became a reality and several problems were encountered once the study was placed on the web.

SpaceTEC and this researcher contacted the member colleges through conference calls and emails asking for the following three pieces of information:

- How many students had graduated from SpaceTEC core curriculum programs with a two year degree each year starting in 2002 and ending in 2008 at each member college?
- What are the names of the degrees in each member college that use the SpaceTEC core curriculum?
- Would the member colleges provide contact information for each graduate during that time period or be willing to contact those graduates on the researcher's behalf?

One member college provided the number of graduates from their school during the time period. Only three member colleges provided the names of their degrees offered and SpaceTEC provided the rest of the list of degrees through email and their website. No member college would provide contact information for the graduates citing privacy laws such as the Family Educational Rights and Privacy Act or FERPA.

FERPA applies to all schools that receive some form of Federal financial aid. It is designed to protect student's privacy by limiting the release of their education records.

Before a student's educational record's can be released, the school must obtain written consent from the student.

(U.S. Department of Education, 2008)

Unknown or misunderstood by the member colleges, FERPA does permit disclosure of former students directory information without written permission under §99.37. (U.S. Department of Education, 2008) The schools do have to give the former students an opportunity to opt out while students and also list the information that they designate as directory information. “§99.37 (b) Former Students. Current regulations permit schools to disclose directory information on former students without consent or providing notice as otherwise required or an additional opt-out opportunity.” (U.S. Department of Education, 2008, p. 14) Directory information can be such items of information as name, address, phone number, photograph, major field of study, and email address. It cannot be information such as grades or social security numbers, etc. (U.S. Department of Education, 2008)

Without the contact information being provided by the member colleges, other means were needed to notify the graduates about survey. “Word of mouth” was the only other option available. This researcher sent out an invitation email to the survey to every graduate, member college contact, and former instructors inviting the graduates to take the survey and to pass the invitation on to their former classmates. The original survey was to last only fourteen days, but was extended to seventeen to allow extra time for the invitation to circulate to more graduates.

Because the researcher was a former student of Brevard Community College, “word of mouth” was more “successful” with the graduates of that school than with other

member colleges. Nearly 2/3rd of the graduates that originally responded were from Brevard Community College. Nearly all of these respondents are also co-workers of the researcher and each other. That of course made the data from the Brevard Community College graduates overwhelmingly “placed” making the data less objective. There were 18 Brevard Community College “placed” out of the total of 21 eligible graduates from all the member colleges that answered the study.

Without the contact information being provided by the member colleges, “word of mouth” turned out to be a poor substitute.

CHAPTER VII

RECOMMENDATIONS

The Statement of the Problem still remains unanswered: What is the effectiveness of a two year degree based on the SpaceTEC Aerospace Technical Education Core Curriculum using the percentage of graduated students hired or placed into the aerospace industry while students or within one year of graduation as a form of measurement?

For many schools it is suspected that too much emphasis is placed on how many enroll and not enough of how many successfully graduate or find employment. That is understandable. Schools need students and so that is normally their focus. Students seek an education in order to obtain a better way of life, i.e. a better job. This is a classic case of “Show me the money!” Both parties rate success differently, yet if students are successful in improving their way of life that should increase enrollment for schools in the long run.

This researcher recommends that the study be done again, but with a few changes made:

- Get the funding agency, The National Science Foundation, involved. Their official stamp of approval on the study may encourage more cooperation from the member colleges and help clear up any misunderstandings on what can and cannot be done under FERPA.
- Involve the member colleges earlier in the study than was done before. A new researcher may do better by establishing contacts within the member colleges early on and developing a professional relationship with them. In other words,

sell the importance of the study to the member colleges and make them eager and active participants working towards the success of the study.

- Develop a contact list of the graduates prior to launching the study. Perhaps SpaceTEC can keep a form of directory information of all graduates with the member college's cooperation.

With these changes it may be possible for the study to be completed with comprehensive data that will assist all parties and institutions that have a vested interest in determining the success rate of their program from the graduate's viewpoint.

REFERENCES

- Allen, D. C. (2007). *A Student Researcher's Guide To Using Statistics*. Daytona: Embry-Riddle Aeronautical University Extended Campus.
- Answers Corporation. (2006). *Higher Education -US History Encyclopedia-Colleges and Universities*. Retrieved December 10th, 2008, from Answers.Com:
<http://www.answers.com/topic/higher-education>
- Bailey, T., Kienzl, G., & Marcotte, D. E. (2004, August). *The Return to a Sub-Baccalaureate Education: The Effects of Schooling, Credentials and*. Retrieved December 15th, 2008, 2008, from www.ed.gov:
<http://www.ed.gov/rschstat/eval/sectech/nave/subbac-ed.pdf>
- Bender, A., Clark, R., Hanrahan, P., Harsha, W., McMasters, B., Murphy, E., et al. *Graduate/Technical Management Capstone Project Guidelines* (6th ed.). Daytona: Embry-Riddle Aeronautical University Extended Campus.
- Choy, S. P., Bradburn, E. M., & Carroll, C. D. (2008, February). *2008, Ten Years After College: Comparing the Employment Experiences of 1992-1993's Bachelors Degree Recipients With Academic and Career Oriented Majors*. Retrieved February 23, 2009, from IES National Center For Education Statistics:
<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2008155>
- Encyclopædia Britannica. (2008). *Encyclopædia Britannica Online*. Retrieved December 10th, 2008, from Encyclopædia Britannica:
<http://www.britannica.com/EBchecked/topic/265464/higher-education>

- Groves, C. L., Hendricks, J. G., & Isbell, T. S. (1992). *A Comparative Analysis of Postsecondary Technical Education in Texas*. Waco, TX: Texas State Technical College System.
- Hinkle, D. R., Beagley, R., Flynn, M., Harris, S., Hollingsworth, D. T., Moore, S., et al. (2008). *National Visiting Committee Report: SpaceTEC National Aerospace Technical Education Center Year 6 2007-2008*. Cape Canaveral Air Force Station: SpaceTEC.
- IES National Center For Education Statistics. (2008, September). *Digest of Education Statistics 2007*. Retrieved September 30, 2008, from IES National Center For Education Statistics: <http://nces.ed.gov/programs/digest/d07/>
- IES National Center For Education Statistics. (2008). *Table 20-1. Median annual earnings of full-time, full-year wage and salary workers ages 25–34, by educational attainment, sex, and race/ethnicity: Selected years, 1980–2006*. Retrieved February 24, 2009, from The Condition of Education Learner Outcomes: Tables: <http://nces.ed.gov/programs/coe/2008/section2/table.asp?tableID=894>
- Jefferson College. (2001). Volume I Student Characteristics. In *Fall 2001 Factbook*. Jefferson College.
- Kleiner, B., Lewis, L., & Greene, B. (2005, April). *Dual Enrollment of High School Students at Postsecondary Institutions*. Retrieved February 23, 2009, from National Center For Education Statistics: <http://nces.ed.gov/pubs2005/2005008.pdf>

Leedy, P. D., & Ormrod, J. E. (2005). *Practical Research Planning and Design* (8th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Morante, E. E. (2003). Assessing Student Services and Academic Support Services. *iJournal Insight Into Student Services* , 2-8.

SpaceTEC. (2007). *SpaceTEC*. Retrieved August 25, 2008, from SpaceTEC:
<http://www.spacetec.org>

Swindell, J. (2007). *Calhoun Community College Aerospace Program Review for Alabama College System and Commission on Higher Education*. Calhoun Community College. Decatur, AL: Calhoun Community College.

Tanner, L. D. (2007). Dr. Koller Retirement Gemini Class Gift. *Gemini Class Then and Now 2003-2007* . Florida, United States of America: Gemini Class.

Triola, M. F. (2006). *Elementary Statistics* (10th ed.). Boston, MA, USA: Pearson Education.

U.S. Department of Education. (2008, December 23). *Family Educational Rights and Privacy Act (FERPA)*. Retrieved May 17, 2009, from ED.gov:
<http://www.ed.gov/policy/gen/guid/fpco/ferpa/index.html>

U.S. Department of Education. (2008, December). *Family Educational Rights and Privacy Act (FERPA) Section by Section Analysis*. Retrieved May 17, 2009, from Ed.gov: <http://www.ed.gov/policy/gen/guid/fpco/pdf/ht12-17-08-att.pdf>

U.S. Department of Education Office of Vocational and Adult Education. (2008, September 11). *Carl D. Perkins Vocational and Technical Act of 1998: Report to Congress on State Performance Program Year 2004-2005*. Retrieved September

25, 2008, from Office of Vocational and Adult Education:

<http://www.ed.gov/about/offices/list/ovae/resource/2005perkins.pdf>

APPENDIX A

BIBLIOGRAPHY

- Allen, D. C. (2007). *A Student Researcher's Guide To Using Statistics*. Daytona: Embry-Riddle Aeronautical University Extended Campus.
- Answers Corporation. (2006). *Higher Education -US History Encyclopedia-Colleges and Universities*. Retrieved December 10th, 2008, from Answers.Com:
<http://www.answers.com/topic/higher-education>
- Bailey, T., Kienzl, G., & Marcotte, D. E. (2004, August). *The Return to a Sub-Baccalaureate Education: The Effects of Schooling, Credentials and*. Retrieved December December 15th, 2008, 2008, from www.ed.gov:
<http://www.ed.gov/rschstat/eval/sectech/nave/subbac-ed.pdf>
- Bender, A., Clark, R., Hanrahan, P., Harsha, W., McMasters, B., Murphy, E., et al. *Graduate/Technical Management Capstone Project Guidelines* (6th ed.). Daytona: Embry-Riddle Aeronautical University Extended Campus.
- Choy, S. P., Bradburn, E. M., & Carroll, C. D. (2008, February). *2008, Ten Years After College: Comparing the Employment Experiences of 1992-1993's Bachelors Degree Recipients With Academic and Career Oriented Majors*. Retrieved February 23, 2009, from IES National Center For Education Statistics:
<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2008155>
- Encyclopædia Britannica. (2008). *Encyclopædia Britannica Online*. Retrieved December 10th, 2008, from Encyclopædia Britannica:
<http://www.britannica.com/EBchecked/topic/265464/higher-education>

- Groves, C. L., Hendricks, J. G., & Isbell, T. S. (1992). *A Comparative Analysis of Postsecondary Technical Education in Texas*. Waco, TX: Texas State Technical College System.
- Hinkle, D. R., Beagley, R., Flynn, M., Harris, S., Hollingsworth, D. T., Moore, S., et al. (2008). *National Visiting Committee Report: SpaceTEC National Aerospace Technical Education Center Year 6 2007-2008*. Cape Canaveral Air Force Station: SpaceTEC.
- IES National Center For Education Statistics. (2008, September). *Digest of Education Statistics 2007*. Retrieved September 30, 2008, from IES National Center For Education Statistics: <http://nces.ed.gov/programs/digest/d07/>
- IES National Center For Education Statistics. (2008). *Table 20-1. Median annual earnings of full-time, full-year wage and salary workers ages 25–34, by educational attainment, sex, and race/ethnicity: Selected years, 1980–2006*. Retrieved February 24, 2009, from The Condition of Education Learner Outcomes: Tables: <http://nces.ed.gov/programs/coe/2008/section2/table.asp?tableID=894>
- Jefferson College. (2001). Volume I Student Characteristics. In *Fall 2001 Factbook*. Jefferson College.
- Kleiner, B., Lewis, L., & Greene, B. (2005, April). *Dual Enrollment of High School Students at Postsecondary Institutions*. Retrieved February 23, 2009, from National Center For Education Statistics: <http://nces.ed.gov/pubs2005/2005008.pdf>

Leedy, P. D., & Ormrod, J. E. (2005). *Practical Research Planning and Design* (8th ed.).

Upper Saddle River, NJ: Pearson Prentice Hall.

Morante, E. E. (2003). Assessing Student Services and Academic Support Services.

iJournal Insight Into Student Services , 2-8.

SpaceTEC. (2007). *SpaceTEC*. Retrieved August 25, 2008, from SpaceTEC:

<http://www.spacetec.org>

Swindell, J. (2007). *Calhoun Community College Aerospace Program Review for*

Alabama College System and Commission on Higher Education. Calhoun

Community College. Decatur, AL: Calhoun Community College.

Tanner, L. D. (2007). Dr. Koller Retirement Gemini Class Gift. *Gemini Class Then and*

Now 2003-2007 . Florida, United States of America: Gemini Class.

Triola, M. F. (2006). *Elementary Statistics* (10th ed.). Boston, MA, USA: Pearson

Education.

U.S. Department of Education. (2008, December 23). *Family Educational Rights and*

Privacy Act (FERPA). Retrieved May 17, 2009, from ED.gov:

<http://www.ed.gov/policy/gen/guid/fpco/ferpa/index.html>

U.S. Department of Education. (2008, December). *Family Educational Rights and*

Privacy Act (FERPA) Section by Section Analysis. Retrieved May 17, 2009, from

Ed.gov: <http://www.ed.gov/policy/gen/guid/fpco/pdf/ht12-17-08-att.pdf>

U.S. Department of Education Office of Vocational and Adult Education. (2008,

September 11). *Carl D. Perkins Vocational and Technical Act of 1998: Report to*

Congress on State Performance Program Year 2004-2005. Retrieved September

25, 2008, from Office of Vocational and Adult Education:

<http://www.ed.gov/about/offices/list/ovae/resource/2005perkins.pdf>

APPENDIX B

INTRODUCTION LETTER TO MEMBER COLLEGES

To the Distinguished Member Colleges of SpaceTEC,

I am a 2003 graduate of the SpaceTEC program (Gemini Class) and a graduate student at Embry-Riddle Aeronautical University. I am conducting a study of SpaceTEC for my master's thesis and I am in need of your assistance.

The purpose of my study is to evaluate the effectiveness of the SpaceTEC National Aerospace Technician Education Program by determining the percentage of graduated students that were actually hired into the aerospace industry while they were students or within one year after graduation. This data will be gathered through a survey of the eligible graduates from the various schools within SpaceTEC that offered the core curriculum. The results will be compared and contrasted between SpaceTEC and the national average. My primary hypothesis states, *“The hire or placement rates for graduates of SpaceTEC core curriculum will be comparable to the national averages of 85% to 91%.”*

I will be placing the survey online for the graduates to take the first week of April at the latest and it will run for two weeks. I should complete my study and have the thesis published by the end of May 2009.

The timely assistance I am asking of all the SpaceTEC member colleges is:

1. How many students have graduated from your SpaceTEC core curriculum programs with a two year degree each year starting in 2002 and ending in 2008 at each member college and from SpaceTEC as a whole?

2. What are the names of the degrees in each member college that use the SpaceTEC core curriculum? For example, BCC has two degrees during that time period, Aerospace Technology A.S. and A.A.S., which uses the SpaceTEC core curriculum.
3. Will the member colleges provide me with contact information for each graduate during that time period or be willing to contact those graduates on my behalf?
4. Will the member colleges be kind enough to provide me with a contact person from each school to work with during my study?

I want to thank you all in advance for your help. I will share with each member college a copy of my published thesis for your use once I am finished. Please feel free to pass your questions along to Frank Margiotta or contact me directly at Gregory.N.Cecil@gmail.com.

Sincerely,

Gregory N. Cecil

Gemini 2003

March 4, 2009

APPENDIX C

DATA COLLECTION DEVICE

Dear SpaceTEC Graduate,

I am a graduate student at Embry-Riddle Aeronautical University and a 2003 SpaceTEC graduate (Gemini Class). As part of my degree program, I am conducting a research project to measure the effectiveness of the SpaceTEC program.

Below is a link to an 11 question survey designed to measure the effectiveness of job hires/placement for SpaceTEC graduates from the various member colleges and how it compares to the national average for technical schools. Your answers and input are greatly appreciated and much needed. Only the data you furnish will be used in the study. Your identity will be kept confidential. This survey will be open from April 7th, 2009 to April 24th 2009 at 8 pm EST.

Due to privacy laws, the member colleges of SpaceTEC cannot provide any form of contact information on their graduates for this study. I would humbly ask if you can forward this email to your fellow graduates. The more graduates that respond to this survey, the more accurate and meaningful the data and results.

The results of this survey will be able to help SpaceTEC and their member colleges better prepare current and future students as they begin to seek their first aerospace jobs after graduation. If you wish to know the results of the survey, please email me at Gregory.N.Cecil@gmail.com and I will be glad to provide a link to the published work.

Thanking you in advance,

Gregory N. Cecil

Graduate Student in Masters of Aeronautical Science:

Space Operations Management

Embry-Riddle Aeronautical University

SpaceTEC Survey:

http://www.surveymonkey.com/s.aspx?sm=nSl8yKgtGIVySb3iLqUuvw_3d_3d

Survey Questions

Questions to validate that the survey taker is qualified for the study.

1. What was the name of college you attended? Please select only one.
 - A. Allan Hancock College
 - B. Antelope Valley College
 - C. Brevard Community College
 - D. Calhoun Community College
 - E. Community College of the Air Force
 - F. Cuyahoga Community College
 - G. Edmonds Community College
 - H. Tarrant County College District
 - I. Thomas Nelson Community College
 - J. None of the Above

2. Were you in a degree program at your school that was affiliated with SpaceTEC and its core courses? (*Note: National Aerospace Technician Certification (NATC) does not apply to this survey, only degree programs with a SpaceTEC core curriculum.*)

 Yes No

3. What was your major or degree program?
 - A. Advanced Technology
 - B. Aerospace Manufacturing
 - C. Aerospace Technology, A.A.S.
 - D. Aerospace Technology, A.S.

- E. Aircraft Airframe, A.S.
- F. Aircraft Airframe, Certificate of Completion
- G. Aircraft and Assembly Technician, A.S.
- H. Aircraft Fabrication and Assembly Technician, Certificate of Completion
- I. Aircraft Maintenance, A.S.
- J. Aircraft Powerplant, A.S.
- K. Aircraft Powerplant, Certificate of Completion
- L. Aviation Maintenance Management
- M. Aviation Maintenance, A.A.S.
- N. Avionics Systems Technology, A.A.S.
- O. Electronics Technology, A.S.
- P. Electronics Technology, Certificate of Completion
- Q. Engineering Technology, A.S.
- R. General Aircraft Maintenance, A.S.
- S. General Aircraft Maintenance, Certificate of Completion
- T. Material Science Technology
- U. Metals Technology, A.A.S.
- V. Missile and Space Systems Maintenance, A.A.S.
- W. Nondestructive Testing Technology, A.A.S.
- X. Professional Aeronautics, A.S.
- Y. Professional Aeronautics B.S.
- Z. Technical Management, A.S.
- AA. Technical Management, B.S.

BB. Other

4. Did you graduate?

Yes No Quit program and/or school I am still
in the program.

5. If yes, what year did you graduate?

Year N/A

6. Were you employed by an aerospace company *at time of enrollment* in your
degree program?

Yes No

Measuring Previous Experience

7. Have you ever worked for an aerospace company *prior to enrolling* in the
SpaceTEC program?

Yes No

Measuring Placement Success

8. Were you hired by an aerospace company prior to graduation or within one year
after graduation?

Yes No

9. Does your job relate to the degree you earned?

Yes No N/A

General questions.

10. Age at graduation

A. 18-25

B. 26-30

C. 31-35

D. 36-40

E. 41-45

F. 46-50

G. 50-55

H. 55-70

11. Gender

Female Male

Thank you for your time. Your help is greatly appreciated. Please feel free to leave any helpful comments in the box below.

Comments:

APPENDIX D

SURVEY MONKEY RAW DATA

Evaluating The Effectiveness Of The SpaceTEC National Aerospace Technician Education Program

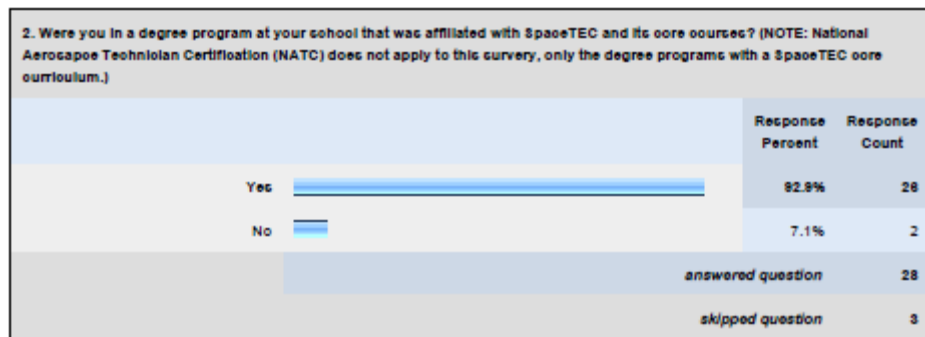
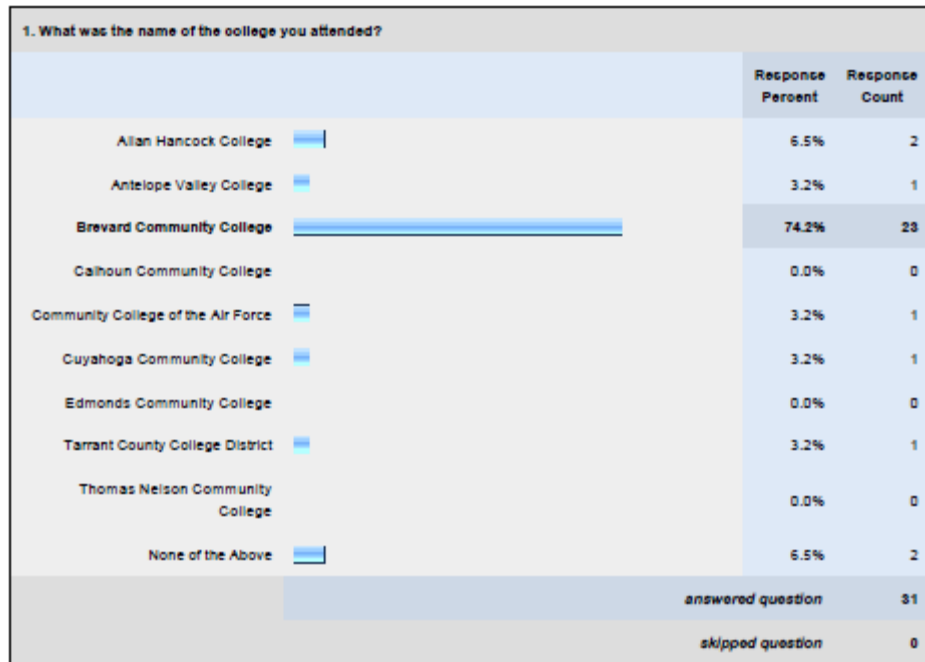


Figure 4 Survey Monkey Raw Data Page 1

3. What was your major or degree program?		
	Response Percent	Response Count
Advanced Technology	0.0%	0
Aerospace Manufacturing	11.1%	3
Aerospace Technology, A.A.S.	37.0%	10
Aerospace Technology, A.S.	44.4%	12
Aircraft Airframe, A.S.	0.0%	0
Aircraft Airframe, Certificate of Completion	0.0%	0
Aircraft and Assembly Technician, A.S.	0.0%	0
Aircraft Fabrication and Assembly Technician, Certificate of Completion	0.0%	0
Aircraft Maintenance, A.S.	0.0%	0
Aircraft Powerplant, A.S.	0.0%	0
Aircraft Powerplant, Certificate of Completion	0.0%	0
Aviation Maintenance Management	0.0%	0
Aviation Maintenance, A.A.S.	0.0%	0
Avionics Systems Technology, A.A.S.	0.0%	0
Electronics Technology, A.S.	0.0%	0
Electronics Technology, Certificate of Completion	0.0%	0
Engineering Technology, A.S.	0.0%	0
General Aircraft Maintenance, A.S.	0.0%	0
General Aircraft Maintenance, Certificate of Completion	0.0%	0
Material Science Technology	0.0%	0
Metals Technology, A.A.S.	0.0%	0

Page 2

Figure 5 Survey Monkey Raw Data Page 2

Missile and Space Systems Maintenance, A.A.S.	0.0%	0
Nondestructive Testing Technology, A.A.S.	0.0%	0
Other	7.4%	2
answered question		27
skipped question		4

4. Did you graduate?

	Response Percent	Response Count
Yes	92.8%	26
No	3.7%	1
Quit Program and/or school	0.0%	0
I am still a student in the program	3.7%	1
answered question		27
skipped question		4

Figure 6 Survey Monkey Raw Data Page 3

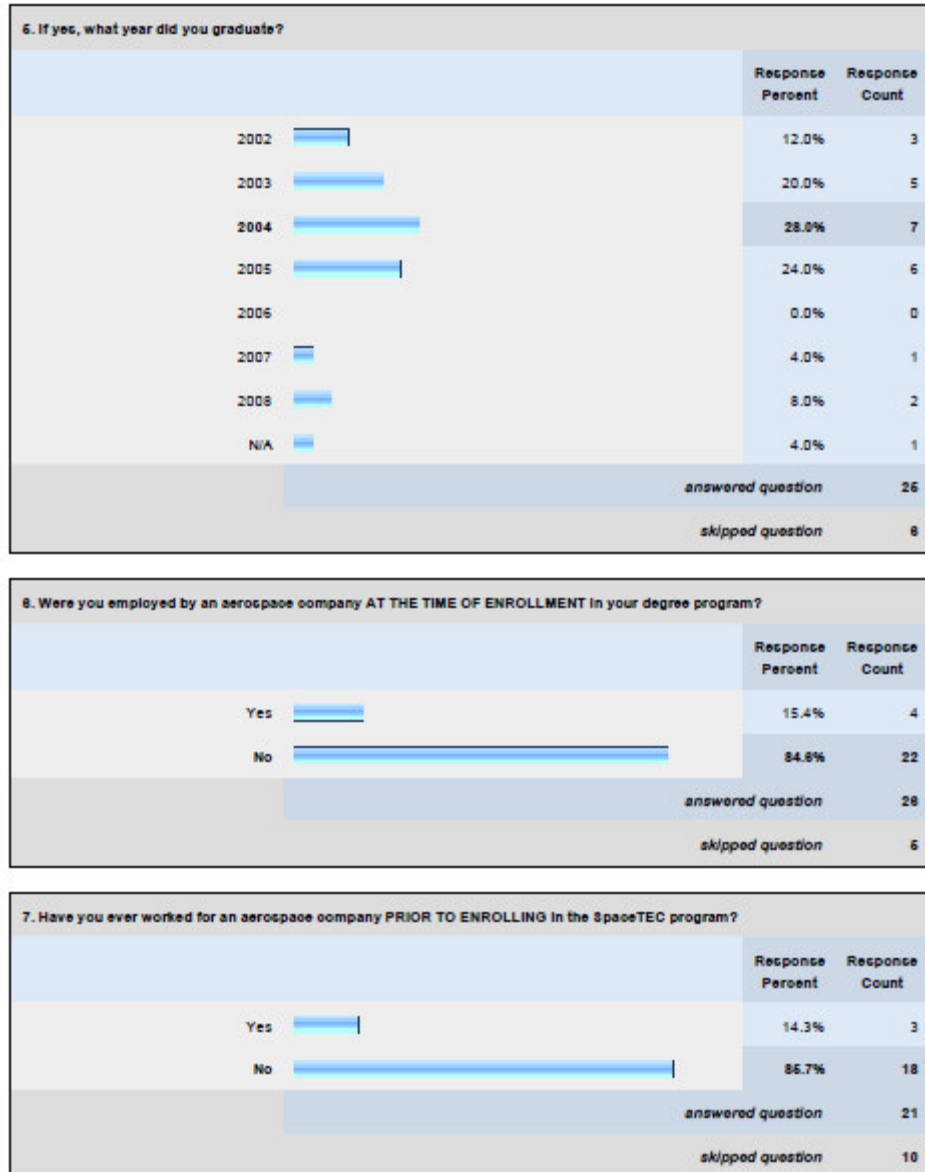


Figure 7 Survey Monkey Raw Data Page 4

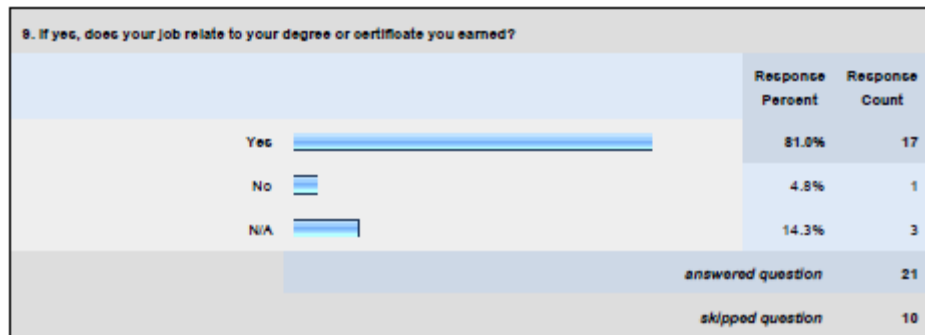
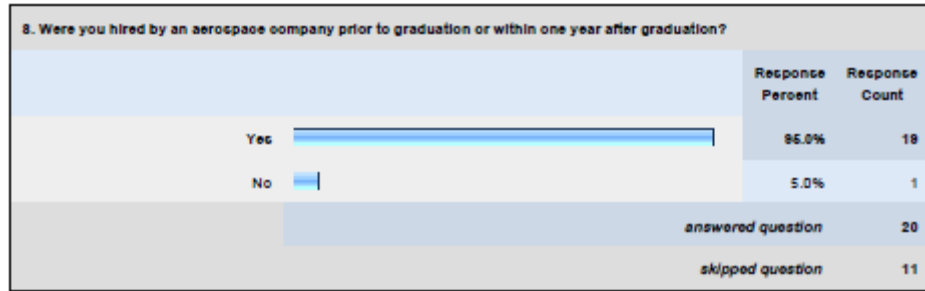


Figure 8 Survey Monkey Raw Data Page 5

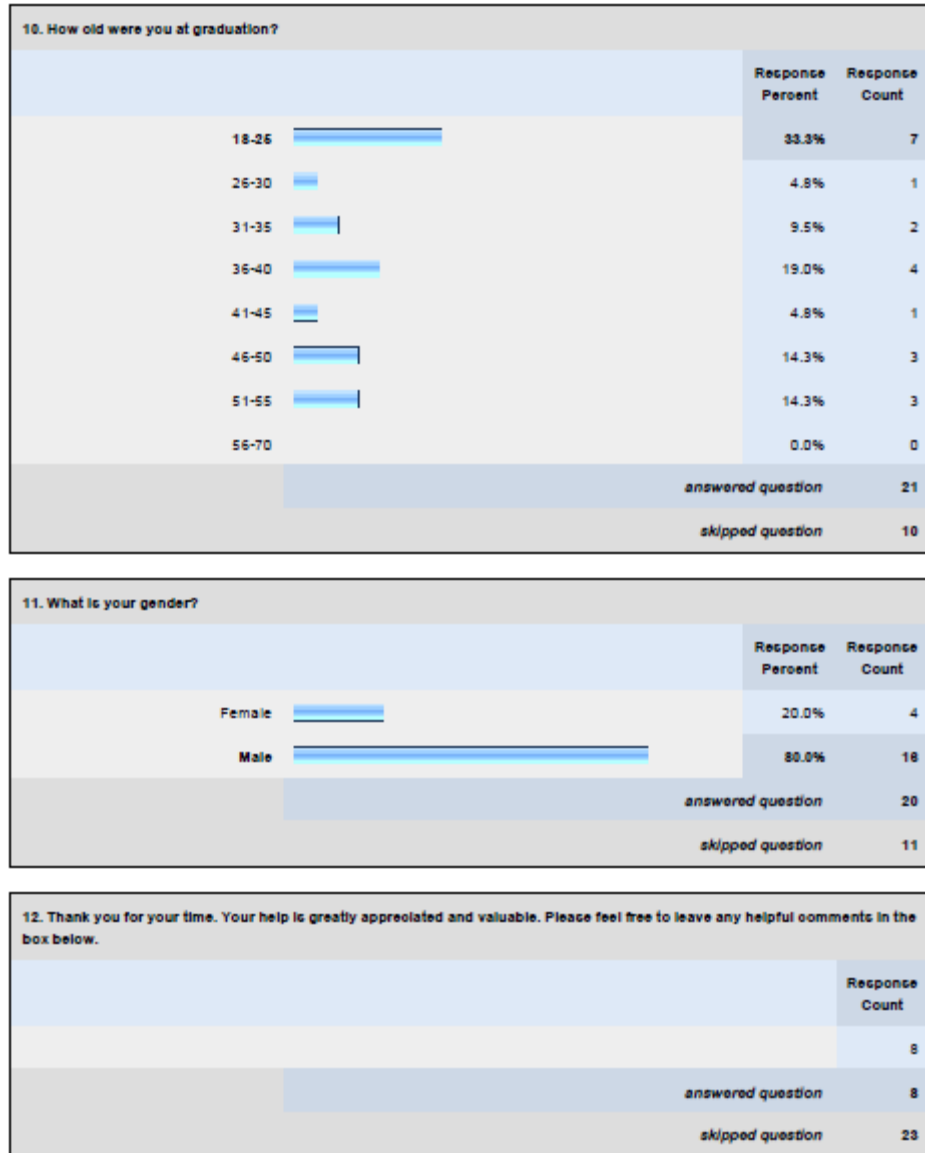


Figure 9 Survey Monkey Raw Data Page 6

APPENDIX E

FOLLOW UP EMAIL TO MEMBER COLLEGES FROM FRANK MARGIOTTA,
PRINCIPLE INVESTIGATOR OF SPACETEC

From: "Margiotta, Frank

Date: March 19, 2009 5:31:00 PM EDT

To

Subject: SpaceTEC Study

Dear Colleagues:

As I mentioned during last week's teleconference we received a request from Mr. Greg Cecil (former BCC Aerospace Technology graduate and SpaceTEC Certified Aerospace Technician) to assist in the collection of data for his Master's thesis project. Mr. Cecil is studying the effectiveness of our aerospace-related technology degree programs by comparing the placement rates of our graduates with the national average of other technology degree program graduates.

Since we have not collected graduation and placement rates as part of our reporting and evaluation efforts, I wish to ask that you consider Greg's request if you are able to do so. I think you will find the study useful as a benchmark to other programs.

Greg is specifically seeking:

- 1) The number of students who have graduated from your core technical curriculum programs.
- 2) The names of the space-related technical programs offered at your college (I already provided most of this information).
- 3) Contact information for graduates (if allowed and available).

I've included Greg on this message and attached his letter of request. Greg will contact you by e-mail and if you are able to help, please do so.

Thank you for your consideration of this request and your continued support.

Frank

APPENDIX F

RESEARCHERS FOLLOW UP EMAIL TO THE MEMBER COLLEGES

From: Cecil, Gregory

Date: March 30, 2009 3:19:00 PM EDT

To

Subject: SpaceTEC Study

To the distinguished Ladies and Gentlemen of the SpaceTEC Member Colleges,

I wanted to take a moment and ask again for your cooperation for my Masters Thesis. To recap, the purpose of my study is to evaluate the effectiveness of the SpaceTEC National Aerospace Technician Education Program by determining the percentage of graduated students that were actually hired into the aerospace industry while they were students or within one year after graduation.

I will be taking my survey "live" by the end of the week and still need pertinent information from each of your colleges, *especially contact information for your graduates* or your willingness to contact your graduates on my behalf.

The four pieces of information I need in order to complete the next step are:

1. How many students have graduated from your SpaceTEC core curriculum programs with a two year degree each year starting in 2002 and ending in 2008 at

each member college and from SpaceTEC as a whole?

2. What are the names of the degrees in each member college that use the SpaceTEC core curriculum? For example, BCC has two degrees during that time period, Aerospace Technology A.S. and A.A.S., which uses the SpaceTEC core curriculum.
3. Will the member colleges provide me with contact information for each graduate during that time period or be willing to contact those graduates on my behalf?
4. Will the member colleges be kind enough to provide me with a contact person from each school to work with during my study?

I have only 6 weeks left to do my survey, analyze the data, and submit my thesis. Your prompt reply would be much appreciated. Thank you all in advance for your help. I will share with each member college a copy of my published thesis for your use once I am finished. Please feel free to pass your questions along to Frank Margiotta or contact me directly at Gregory.N.Cecil@gmail.com.

Sincerely,

Gregory N. Cecil

Gemini Class 2003

ERAU Graduate Student

“Sometimes I feel like a mediocre man who has been blessed with an

extraordinary life.” – GNC