

DETERMINATION OF CURRICULUM RELEVANCE TO INDUSTRY:  
THE TEXAS FFA CAREER DEVELOPMENT EVENT  
POULTRY SKILLS AND KNOWLEDGE CURRICULUM AS IT  
RELATES TO THE POULTRY INDUSTRY

A Thesis

by

KOLTON CASH PAGE

Submitted to the Office of Graduate and Professional Studies of  
Texas A&M University  
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Chair of Committee,  
Co-chair of Committee,  
Committee Member,  
Head of Department,

Theresa Pesl Murphrey  
Gary E. Briers  
Jason T. Lee  
Clare Gill

December 2017

Major Subject: Agricultural Leadership, Education, and Communications

Copyright 2017 Kolton Cash Page

## ABSTRACT

I attempted to assess the relevance of the Texas FFA Poultry Evaluation Career Development Event (CDE) curriculum to the poultry industry—specifically, as the event relates to preparing students for careers in the poultry industry. In the first phase of the study, I interviewed poultry industry professionals and academic faculty who focused on broiler production, layers/egg production, processing, nutrition, genetics, disease, entrepreneurship, or who held a general focus. The intent of the interviews was to record participants' views about the knowledge and skills needed by entry-level employees who are college graduates. The findings revealed that it is important for college graduate, entry-level employees to possess general poultry knowledge, computer technology skills, math skills, the ability to learn, strong work ethic, interpersonal skills, communication skills, and problem-solving skills. Findings also revealed that those currently entering the industry lack interpersonal skills, communication skills, work ethic, and problem-solving skills.

In the second phase, I reviewed data collected during interviews with the industry leaders to determine what knowledge and skills were being taught to high school students through the Texas FFA Poultry Evaluation CDE curriculum. The findings suggested that each piece of the current curriculum was useful in providing a basic understanding of poultry and the poultry industry—from the perspective that students might pursue a career in this field. However, the findings also revealed deficiencies in the curriculum related to desired communication skills, team collaboration skills, computer technology skills, and bird health knowledge and skills. Industry leaders

expressed that the CDE also failed to inform students of the vast career options available in the poultry industry or develop students' problem-solving skills through a deep understanding of the subject matter.

Based upon findings, I recommend the Texas FFA Poultry Evaluation CDE curriculum be revised to include elements to enhance participants' communication, problem-solving, teamwork, and bird health knowledge and skills. Improvements in these areas are important to the poultry industry and are likely to result in more capable employees entering the poultry industry.

## DEDICATION

This thesis is dedicated to my wife, Katie. Thank you for waiting on me and never losing faith in us. Now, we can finally start our lives together. I love you, always.

## ACKNOWLEDGEMENTS

I acknowledge God for giving me the patience and opportunity to complete this research study. It is only through His blessings that any of us can better the world around us through our research or other endeavors.

Many professors have contributed to my education as well as to my study. Dr. Murphrey, my committee co-chair, has been thoroughly understanding. I have had some life-changing events going on in the middle of my graduate studies such as getting married, and moving into my first home. No matter what I was going through, she was always able to give the advice that I needed to hear.

Dr. Briers, my other co-chair, was always there when I asked for his help. No matter how busy he was, he managed to fit in time for me. The edits and critiques that he made were always thoughtful and precise, which was much appreciated.

Dr. Lee could sometimes be referred to as stern or unforgiving. However, his faith in me and my abilities throughout the five years that I have known him was often more faith than I had in myself. I consider him a dear friend.

Dr. Edney's contributions, especially when brainstorming about the big picture issues with my research, were priceless. He has always been extremely appreciative of my work and abilities. This has given me great confidence. I am even more appreciative of him for being on my graduate committee than he is of me.

I also thank my friends and colleagues and the department faculty and staff for making my time at Texas A&M University a great experience.

Finally, thanks to my mother, father, and family for their love, encouragement, and financial support. I could never have accomplished half of my goals without their help.

## CONTRIBUTORS AND FUNDING SOURCES

This work was supervised by a thesis committee consisting of Dr. Theresa Murphrey (co-chair), Dr. Gary Briers (co-chair), and Dr. Kirk Edney (special member) of the Department of Agricultural Leadership, Education, and Communications and Dr. Jason Lee (member) of the Department of Poultry Science.

All work conducted for this thesis was completed by the student in consultation with the committee.

There are no outside funding contributions to acknowledge related to the research and compilation of this document.

## NOMENCLATURE

CDE	Career Development Event
CTE	Career and Technical Education
FFA	The National FFA Organization
HPAI	Highly Pathogenic Avian Influenza
HC	Human Capital
GHC	General Human Capital
FSHC	Firm-Specific Human Capital
OJT	On-the-Job Training



## TABLE OF CONTENTS

	Page
ABSTRACT .....	ii
DEDICATION .....	iv
ACKNOWLEDGEMENTS .....	v
CONTRIBUTORS AND FUNDING SOURCES.....	vii
NOMENCLATURE.....	viii
TABLE OF CONTENTS .....	ix
LIST OF FIGURES.....	xii
LIST OF TABLES .....	xiii
CHAPTER I INTRODUCTION .....	1
Background and Setting .....	1
Author’s Lived Experience .....	3
CHAPTER II A QUALITATIVE ANALYSIS OF INDUSTRY PERSPECTIVES REGARDING UNITED STATES POULTRY INDUSTRY SKILL NEEDS .....	5
Literature Review .....	6
Industry Change .....	6
Demand .....	6
Shift in Skills.....	6
Education.....	8
Training .....	10
Theoretical Framework .....	10
General Human Capital .....	10
Firm-Specific Human Capital .....	11
Investments.....	11
Summary .....	12
Methods .....	14
Qualitative Research .....	14
Sampling.....	14

Interviews .....	17
Analysis .....	17
Limitation of the Study .....	18
Findings .....	20
Computer Technology Skills.....	21
Mathematical Skills.....	21
Ability to Learn .....	22
Interpersonal Skills.....	22
Communication Skills .....	23
Work Ethic .....	23
General Poultry Knowledge and Skills/Basic Understanding.....	24
Problem-Solving Skills/Deeper Understanding .....	25
Conclusions and Recommendations.....	25
Computer Technology Skills.....	26
Mathematical Skills.....	26
Ability to Learn .....	27
Interpersonal Skills and Communication Skills.....	28
Work Ethic .....	28
General Poultry Knowledge and Skills/Basic Understanding and Problem-Solving Skills/Deeper Understanding .....	29
Recommendations for Future Research .....	30
Implications .....	31

CHAPTER III TEXAS FFA POULTRY EVALUATION CAREER DEVELOPMENT EVENT AND ITS RELATION TO INDUSTRY: ARE WE MEETING INDUSTRY NEEDS? .....	34
--	----

Literature Review .....	36
Career and Technical Education.....	36
Poultry Science Education .....	37
Career Development Event Benefits .....	38
Theoretical Framework .....	39
General Human Capital .....	39
Firm-Specific Human Capital .....	40
Investments.....	40
Water Glass Analogy .....	41
Summary .....	41
Methods .....	42
Qualitative Research .....	42
Sampling.....	42
Interviews .....	43
Analysis .....	44
Limitation of the Study .....	44
Findings .....	45

Communication Skills .....	46
Team Collaboration Skills.....	46
Bird Health Knowledge and Skills.....	47
Computer Technology Skills.....	47
Career Options Knowledge .....	47
General Poultry Knowledge and Skills/Basic Understanding.....	48
Problem-Solving Skills/Deeper Understanding .....	48
Conclusions and Recommendations.....	49
Communication Skills .....	50
Team Collaboration Skills.....	51
Bird Health Knowledge and Skills.....	51
Computer Technology Skills.....	52
Career Options Knowledge .....	53
General Poultry Knowledge and Skills/Basic Understanding & Problem-Solving Skills/Deeper Understanding .....	53
Recommendations for Future Research .....	55
Implications .....	56
 CHAPTER IV SUMMARY AND CONCLUSIONS .....	 58
Knowledge and Skills Needed in the Poultry Industry .....	58
When to Build This Knowledge and Skills .....	59
Poultry Evaluation CDE as Avenue for Knowledge and Skill Education ....	59
Poultry Evaluation CDE Improvements.....	60
 REFERENCES .....	 61
 APPENDIX A .....	 67
 APPENDIX B .....	 68
 APPENDIX C .....	 69
 APPENDIX D .....	 70
 APPENDIX E.....	 71

## LIST OF FIGURES

	Page
Figure 1 Investments to Firm-Specific and General Human Capital .....	13

## LIST OF TABLES

	Page
Table 1 Participant Coding Related to Interviews with Poultry Industry Leaders Regarding Knowledge and Skill Needs for the Industry.....	16

# CHAPTER I

## INTRODUCTION

### **Background and Setting**

The United States Department of Agriculture (USDA, 2016b) reported that the global production of poultry has dramatically increased in the past few decades and is projected to continue its increasing trend in the coming years. The expansion of poultry production is seen across the globe in Brazil, India, the European Union, and the United States. Worldwide, poultry meat represents almost one-third of all meat produced and consumed (Scanes, 2007). The accelerated production is in response to an increasing global demand (USDA, 2016a). In the United States, the consumption of poultry meat surpasses that of either beef or pork (USDA, 2016a). The current demand could not have been met with adequate supply just a decade ago. The ability to keep up with demand is a result of recent advancements in almost every aspect of poultry production. Cook (1990) wrote that the poultry industry has become one of the most progressive and innovative agricultural industries due to its willingness to adopt new technology.

Often, companies are forced to increase the quantity of labor and capital to raise production levels. However, the poultry industry's increase in production is in response to an increase in labor quality. The quality increase comes from a more efficient labor force, emerging from new labor-saving mechanical equipment and efficiencies (Lance, 1995). These advances have not decreased the amount of labor needed in the industry, but rather they have developed a need for more capable labor, as can be seen in the poultry industry's college graduate, entry-level employees. This was emphasized in

Snetsinger's (1992) study on poultry science training. New employees must be sensitive to the new agendas of the industry and be able to obtain new skills to be effective industry leaders and managers (Snetsinger, 1992).

Education is an effective way of building knowledge and skills to equip employees (De la Fuente & Ciccone, 2002, as cited in Alan, Altman, & Roussel, 2008). Vizzier Thaxton, Cason, Cox, Morris, and Thaxton (2003) concluded that poultry science education in the United States has failed to address current industry concerns, and therefore lacks the ability to prepare students at the university level for the new, innovative poultry industry. For more than a decade, a decline has been observed in the number of university poultry science students and departments.

To reverse this trend, some researchers, such as Bradley (1988), have suggested that youth need to be targeted and recruited. "With fewer and fewer people living in rural areas, there must be youth experiences other than a farm background, for children to be exposed to poultry" (Bradley, 1988, p. 889).

One avenue for youth to be exposed to the poultry industry is through participation in a Career Development Event (CDE) during high school. These CDEs are part of the National FFA Organization. By testing their knowledge and skills against each other and other teams, participants in CDEs gain technical skills that will stay with them and provide a strong foundation, should they choose to pursue a career in the agriculture area of the CDE in which they participate (Texas FFA Association, n.d., "Overview," para. 1).

CDEs were created with the purpose of building participants' leadership skills along with the technical employment skills being taught in early vocational education programs (Ewing, Clark, & Threeton, 2014). Many supporters of the FFA and its CDEs commend the skills that these events teach students. The Poultry Evaluation CDE has the added benefit of being developed by a credible committee which helps the CDE to be accurate (Instructional Material Services, 2012). The relevance that these skills have in the poultry industry, however, had not been verified prior to this study.

The Texas FFA Poultry Evaluation CDE comprises 11 activities, each of which requires a different skill or knowledge of the participant (Texas FFA Association, 2017). These skills and educational information have long been set in place. Changes to the CDE are made every few years. However, these changes are minimal in comparison to the changes that the poultry industry has undergone in recent years. The industry must make its needs known to those educating students concerning the training needs of prospective employees (Carlson, 1972). The training that new employees receive adapts to the new technology and innovations of the industry. However, if curriculum and learning opportunities, such as the Texas FFA Poultry Evaluation CDE, fall behind, a gap widens between industry needs and employees' knowledge and skills.

### **Author's Lived Experience**

I have a Bachelor of Science in poultry science. My interest in poultry science was sparked by my participation in the Poultry Evaluation CDE in high school. My involvement in the CDE was extensive both during and after high school. I competed in more than 50 Poultry Evaluation CDEs in my four years as a high school student. During



my undergraduate program, I either assisted in or conducted the set-up and completion of more than 20 CDEs, including the National FFA Poultry Evaluation CDE in 2016. Further, I gained industry experience through a 10-week internship with an egg production company. As a result of these experiences, I possess insight into the skills that can be acquired and enhanced through the CDE experience. These experiences and resulting insight have prepared me to conduct this research and contribute to this body of knowledge.

## CHAPTER II

### A QUALITATIVE ANALYSIS OF INDUSTRY PERSPECTIVES REGARDING UNITED STATES POULTRY INDUSTRY SKILL NEEDS

The commercial poultry industry “has made monumental gains” over the past few decades (Cherian, 2013, p. 492). Advancements in breeding, diet formulation, biosecurity, and flock management have led to vast industry changes. The result has been improvements in growth, yield, and efficiency. Most of this progress can be attributed to companies’ willingness to adopt new technologies and innovations (Cherian, 2013; Cook, 1990; Hamilton et al., 2013; Pelletier, 2014; Romero-Sanchez et al., 2007; Yegani, 2009). Other aspects of the industry have changed as well to accommodate the advancements. Social skills (i.e., soft skills) such as communication, teamwork, interpersonal skills, and problem-solving have grown in importance in reaction to globalization, technological advancements, human diversity, and the transition from a manufacturing-based economy to a service-based economy (Pierson, 2016; Tulgan, 2015). Soft skills have changed from being a beneficial employee characteristic to a necessary employee characteristic (Bancio & Zevalkink, 2007).

This study identified needs that the industry has for its employees, and determined whether those needs were being satisfied. The study was based on interviews with experts across the poultry industry and in academia. Constant comparative analysis of qualitative interviews resulted in findings which support recommendations.

## **Literature Review**

### **Industry Change**

Changes have been observed not only in poultry production, but throughout the agricultural industry (Hamilton, 2013). However, the poultry industry has surpassed the growth of other agriculture segments. Poultry meat now represents almost one-third of all meat produced and consumed worldwide (Scanes, 2007). The consumption of poultry meat has surpassed that of either beef or pork in the United States (National Chicken Council, 2011; USDA, 2016a). The USDA (2016b) projects that the global production of poultry will continue increasing in the coming years. Growth expectations span the globe in Brazil, India, the European Union, and the United States (USDA, 2016b). At the root of the increasing production is the rising global demand for poultry (Yegani, 2009).

### **Demand**

Consumer demand has impacted almost every segment of the poultry industry. Some consumer pressure has caused divisive changes in the industry (Stadig et al., 2016). However, the increase in global demand for poultry has affected the industry favorably. For decades, improvements have been made to meet this growing demand. The industry has created new technologies, uncovered new techniques, improved skills, and gained knowledge to meet needs (Cherian, 2013; Lance, 1995; Scanes, 2007).

### **Shift in Skills**

Another factor for success, according to Snetsinger (1992), has been the shift in the types of skills and competencies that employees are asked to perform. What was once a much simpler industry focused on efficiency and increased production is now a

complex, intertwined combination of breeding, nutrition, technology, regulations, welfare, biosecurity, global economies, management, and consumer marketing (Cherian, 2013; Scanes, 2007; Snetsinger, 1992).

The addition of job skills has not led to more employees. Rather, it has led to a need for more capable employees. New employees must be sensitive to the new industry agenda and be able to obtain new skills to be effective industry leaders and managers (Snetsinger, 1992).

Some of these skills include computer technology skills, mathematical skills, adaptability skills, communication skills, and problem-solving skills. The ability to operate and take advantage of the new technology is paramount to achieve the success that Cook (1990) mentions in his study about the progressive and innovative poultry industry. Mathematical skills go far beyond crunching numbers in the classroom. Anderson and Anderson (2012) stress that agriculture is applied science and applied mathematics. This means that mathematics is naturally imbedded within agriculture. One esteemed participant in their study indicated that math was a part of all aspects of agriculture (Anderson & Anderson, 2012). In the poultry industry, mathematics comes in the form of accounting, statistics, financial understanding, and much more. Some sort of mathematics should be considered and used in almost every decision that is made on a poultry farm. Snetsinger (1992) understood the importance of adaptability and expressed the importance of employees' ability to learn and obtain new skills to be effective in the industry. According to Crawford, Lang, Fink, Dalton, and Fielitz (2011), soft skills (e.g., communication skills, interpersonal skills, problem solving skills, etc.) are essential for

students to “transition from completion of baccalaureate degrees to competitive employment in agriculture, natural resources and related careers” (Crawford et al., 2011, p. 1). In their study, Crawford et al. sought to rank the importance of soft skills for new graduates. They concluded that communication and problem-solving skills are the two most important skills for a new graduate to possess. Without communication and problem-solving, employees lack the ability to “communicate findings to people who do not know anything about what you’re doing” or “take an ambiguous problem and break it down into executable development plan” (Crawford et al., 2011, p. 21). Phipps, Osborne, Dyer, and Ball (2008) support that employers in agriculture have a demand for critical-thinking, decision-making, and problem-solving skills. Individuals are not born with the skills and competencies utilized in the industry. These skills and competences must be obtained through education, training, or exposure (Brake & Pardue, 1998; Scanes, 2007; Summers, 1992).

### **Education**

The industry needs educated employees. Scanes (2007) stresses that industry should invest in universities for outreach, research, and teaching. Many of the advancements made by the industry have come through research. Regardless of whether the research is done inside or outside of universities, it is the universities that are educating the students to perform the research and a wide variety of other tasks asked of employees (Scanes, 2007).

In a study conducted by Racicot, Venne, Durivage, and Vaillancourt (2012), the compliance of biosecurity measures was significantly affected by education level. This is

an increasingly important skill needed in the poultry industry due to the recent outbreak of Highly Pathogenic Avian Influenza (HPAI) across the United States (Pantin-Jackwood, Stephens, Bertran, Swayne, & Spackman, 2017). Those with less experience and education were shown to be less competent in this area.

Education is one of the most effective ways to prepare employees to handle industry needs. Bloom (1956) wrote about six levels of learning that people go through in his/her pursuit of new knowledge and skills. Effective education helps individuals exceed the first learning level (i.e., remembering) and venture into the higher levels (i.e., comprehending, applying, analyzing, synthesizing, evaluating). This is more easily accomplished during or after the adolescent learning level, in which students can use reason both inductively and deductively, hypothesize and apply principles of logic, and conceptualize ideas (Aronowitz, 2006; Vander Zanden et al., 2007, as seen in Bastable & Dart, 2008). According to Vizzier Thaxton et al. (2003), poultry science education in the United States has failed to address current industry concerns, and therefore lacks the ability to prepare students for the new, innovative poultry industry. The number of university poultry departments and students have declined for over a decade (Beck, 1992; Vizzier Thaxton et al., 2003). Some researchers, such as Bradley (1988), have suggested that youth need to be targeted and recruited. “With fewer and fewer people living in rural areas, there have to be youth experiences other than a farm background, for children to be exposed to poultry.” (Bradley, 1988, p. 889).

## **Training**

Companies have the option of hiring individuals who already possess the skills and competencies required, or of training employees themselves. Companies often teach workers during on-the-job training sessions (Snetsinger, 1992). However, the preferred option is to save time and money by hiring individuals who already possess these skills, even if companies have to pay more for these well-equipped employees. This process requires recruiting these individuals from other companies, college educational programs, or a high school program in which they gained skills and competencies.

The industry must make its needs known concerning the training needs of employees to those educating students (Carlson, 1972). The training that new employees receive adapts with the new technology and innovations of the industry. However, if teaching and curriculum are outdated, a gap widens between industry needs and employees' knowledge and skills.

## **Theoretical Framework**

The theory of human capital was used to frame the research. Human capital (HC) is the stock of any knowledge or characteristics a worker may have that contributes to his or her productivity (Acemoglu & Autor, 2011). HC can be anything from capabilities, knowledge, training, ability, and experiences or the ability to efficiently add these things (Vargas, Lloria, & Roig-Dobon, 2016).

### **General Human Capital**

There are two main recognized forms of human capital: general and firm-specific. General human capital (GHC) can be used to increase worker productivity in

almost any context. GHC skills are often taught in places like schools rather than on the job. For this reason, companies have limited control over GHC. Companies can only decide who to hire based on the GHC level that they are looking for (Lazear, 2009). For example, a company could control the GHC knowledge level of employees by hiring only individuals who hold a master's degree. GHC is highly transferable because it can be applied in any context. This makes it easier for workers to switch companies (Raffiee & Russel, 2016). Sources that affect how much GHC a person has are innate abilities, amount of schooling, and school quality (Acemoglu & Autor, 2011).

### **Firm-Specific Human Capital**

The second type of human capital, firm-specific human capital (FSHC), is usually provided by the employer and is acquired during on-the-job training (OJT). OJT often includes GHC as well, but more of the knowledge learned is likely to be FSHC. FSHC knowledge, skills, and abilities have limited value outside of a given firm/company. This type of capital is lost when a worker switches companies (Raffiee & Russel, 2016).

### **Investments**

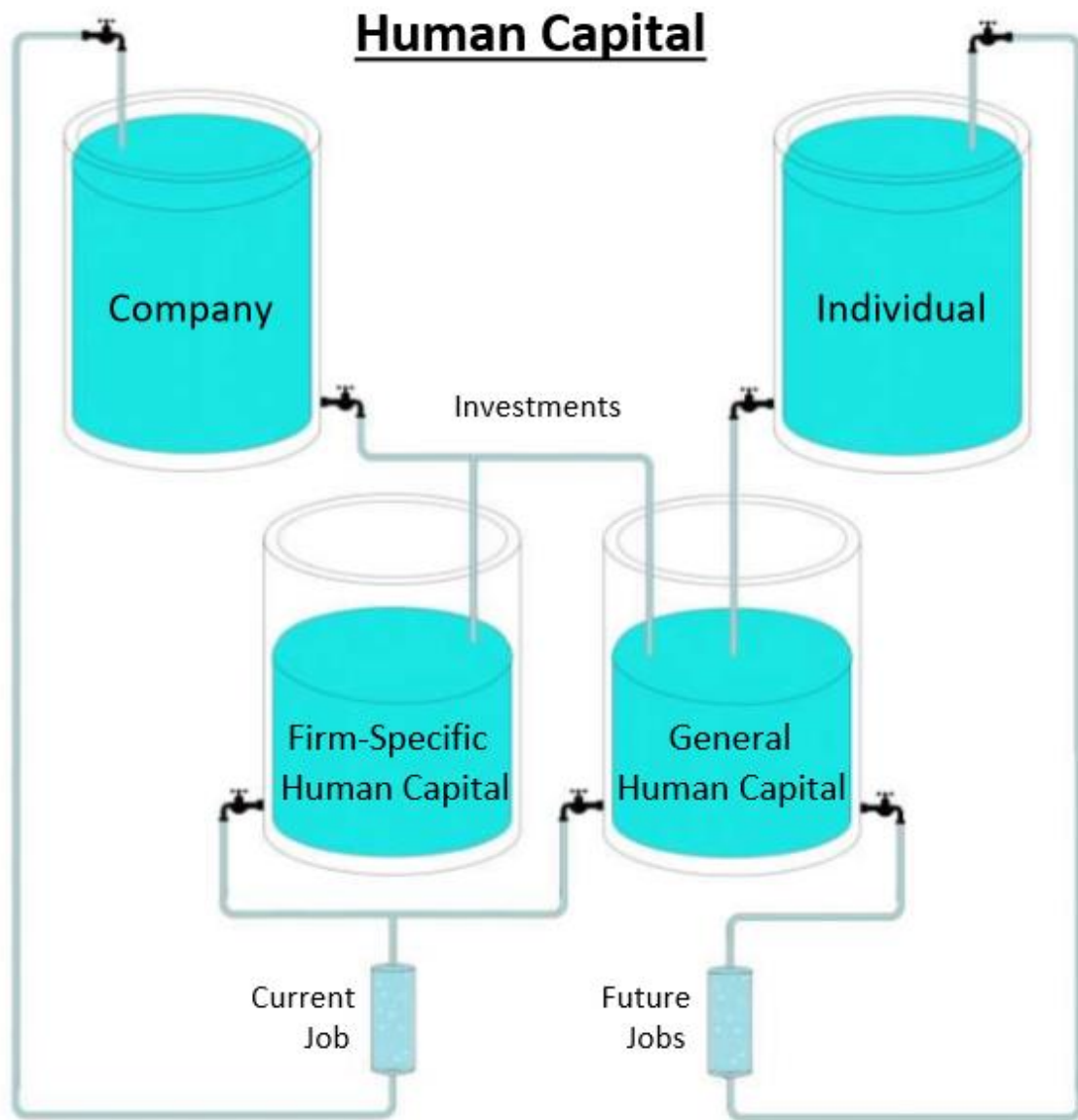
An individual's HC is constantly changing based on investments made in that person. Investments can be made in one's self or by the company in its employees (Acemoglu & Autor, 2011). There are many reasons to invest in HC. Individuals can invest time, money, and effort in themselves to increase capital in hopes of increasing their pay or achieving a higher position. This type of investment is almost always done to increase GHC. When looking at multiple jobs, increased GHC increases competition



for a worker's services (Lazear, 2009). Companies invest time and money in their employees for different reasons. They look to create wealth from the abilities and talent of individuals, and then, through these individuals' work, create value for the company (Vargas et al., 2016). As mentioned before, most of these investments are in the form of OJT and build mostly FSHC (Raffiee & Russel, 2016). FSHC raises the productivity of the worker at the current firm, but not elsewhere. The firm has no interest in raising the value of the worker for another firm if the worker chooses to leave. This is represented in Figure 1. However, not all forms of training are for specific skills (Lazear, 2009). If employees are hired without the necessary GHC skills, then these skills must be addressed in OJT as well. For this reason, companies will often pay someone a higher salary if that person has more GHC because it translates to less future investment by the company.

### **Summary**

There will always be a need for both FSHC and GHC. However, it would be beneficial for the company if the investment in GHC was made by the individual and the investment in FSHC capital was made by the company, rather than the company investing in both. This study observed sources of GHC to be utilized for employee improvement (Acemoglu & Autor, 2011).



*Figure 1.* Investments to Firm-Specific and General Human Capital. Created by author. (Acemoglu & Autor, 2011; Raffiee & Russel, 2016)

## **Methods**

This study used qualitative methods involving in-depth interviews with individuals knowledgeable of the issues. Appendix A presents a copy of IRB approval.

### **Qualitative Research**

Qualitative research has long been used to answer “why” something happens or “why” somebody does something. When asking “why,” researchers are almost always following up the question of “what” (Barnham, 2015). To understand why employees satisfy or fail to satisfy industry needs, one must first know what those industry needs are. This study gathered data to answer the question, “What knowledge and skills are necessary for poultry employees to complete the many tasks asked of them?” Data from interviews was then analyzed to evaluate the question, “Why do industry employees possess or lack the skills and knowledge preferred by the poultry industry?”

Barnham’s (2015) study suggested that researchers must evolve to using qualitative techniques to answer “how” rather than just “why.” The inquiry related to “how” always begins in the interview process. It then continues in the analysis stage in the absence of the respondent. At the conclusion of the study, recommendations for “how” the CDE could be improved to meet the needs of the industry were made.

### **Sampling**

I chose participants using a snowball sampling technique. This technique, as explained by Babbie (1989), begins with a set of original interviewees. Based on their knowledge of the industry, these participants recommend additional interviewees from those leading the industry. New participants are contacted from these recommendations

until the data collected are sufficient for the research. A copy of the email script to academic and industry potential participants is located in Appendix B. For this study, the initial interviewees consisted of executives and production managers of several different sectors of the poultry industry (e.g., broiler production, egg production, processing) and members of academia of several different focuses (e.g., nutrition, egg production, processing). I contacted additional individuals (e.g., human resource coordinators, supervisors, other managers, and faculty) based on recommendations of those whom I contacted initially. This ensured that I garnered input from the perspective of the complete demographic of the poultry industry. I attempted to conduct interviews across industry sectors. I conducted interviews with individuals who were familiar with live production (e.g., broiler meat and egg-type hen) and individuals who were familiar with plant and feed mill sectors. Given that there is more broiler production than other types of production in the state of Texas, I conducted more interviews with individuals from the broiler sector. I conducted interviews with individuals from different levels of management to gain insight from all perspectives. Over a period of three months, I conducted a total of 26 interviews. Of the 26 participants, 7 were academic faculty and 19 were industry professionals; 15 participants were determined to possess notable years of experience and 11 did not; nine participants were female and 17 were male. Table 1 presents the coding used to identify each participant based on their category affiliations.

Table 1.

*Participant Coding Related to Interviews with Poultry Industry Leaders Regarding Knowledge and Skill Needs for the Industry*

Category	Code
Years of Industry Experience	
Experienced	y
Inexperienced	-
Profession	
Academia	A
Industry	I
Focus	
Broilers	B
Layers	L
Processing/Further Processed	P
Nutrition	N
Genetics/Breeders	G
Disease/Biosecurity	D
House Owner (Entrepreneur)	O
General Focus	X
Area	
Quality Assurance/Food Safety	Q
Human Resources/Recruiting &	H
Training	
Management	M
Employee	E
Research	R

## **Interviews**

Interviews were semi-structured to allow for follow-up questions if I saw the opportunity to uncover further information. Follow-up questions and digging deeper uncovered connections between what traits managers prefer and why employees do or do not possess them. Interviews began with a brief explanation of the reason for the interview and the research. I was careful not to lead the participants in any particular direction. Typical questions asked in the interviews included:

- 1) What knowledge and skills are necessary for poultry employees to complete the many tasks asked of them?
- 2) Which aspects are adequately present in poultry employees?
- 3) Which aspects are inadequately present in poultry employees?"

The interview protocol is located in Appendix C.

## **Analysis**

I used the constant comparative method (Lincoln & Guba, 1985) for data analysis of the semi-structured interviews. This type of analysis compares interview responses throughout the entire study rather than waiting until the conclusion of data collection. As new responses began to match previous responses, I developed categories. By constantly comparing the data as they were collected, I gained understanding of the properties and characteristics that made up the underlying trends and themes of each category. The data analysis progressed through peer debriefing, which led to positive impacts for both the data collection interviews and the data analysis categorization (Lincoln & Guba, 1985).

## **Limitation of the Study**

A limitation of the study was identified by scrutinizing the study before, during, and after data collection. While industry supervisors were interviewed, employees working for supervisors were not interviewed. Thus, their viewpoints were not captured. Further, it was recognized that there were three categories of industry employees: supervisors; college graduate, entry-level employees; and hourly, wage employees.

By capturing the viewpoint of industry supervisors but not employees, this research might be telling only half of the story. It is possible that each time a participant responded that industry employees are lacking a skill, a simple miscommunication was occurring. Employees perform tasks based on what they believe their supervisor expects of them. If employees never realize that they are expected to exhibit certain characteristics, they might not display those characteristics even though they are more than capable. An example would be an employee with an extensive knowledge of small engines who never thought his/her supervisor expected him/her to fix the farm's broken exhaust fans. Meanwhile, the supervisor grew annoyed that he/she continually had to hire a third-party engineer to fix the exhaust fans when they broke. By capturing the viewpoint of the employee, this study could have recognized this type of miscommunication.

It is not realistic for supervisors in the poultry industry to expect their entry-level employees to know everything upon arrival. Even if all of this study's recommendations were met, there would still be a learning curve for new employees. It is possible that some of the participants of this study held unrealistic expectations. Unrealistic

expectations could have led supervisors to report a lack of skills that were more than what is needed for employees to be efficient in their work. If interviewed, employees could have given me a better idea of what unrealistic expectations existed, based on what they had learned since being hired.

The participants of this study were all at a level of leadership and management, which took time to develop. However, all participants had at one time been in the same position as those new employees whom they were evaluating (some more recently than others). There are multiple reasons participants would report deficiencies in new employees. Supervisors could be noticing many of the same problems they encountered as new employees. Supervisors could be noticing new employees struggle with a task that was never a problem for them. Supervisors could be noticing that employees lack the knowledge and skills needed to solve a problem that is new to the industry. By considering the participants' past experiences as new employees, I tried to decrease the impact of the limitation resulting from failure to capture the employees' viewpoint.

My ultimate goal was to better prepare those who wish to apply for a position in the poultry industry, thus improving the next group of new industry employees. However, by asking participants to evaluate new employees, I failed to consider the screening process that has already filtered the new employees. Companies hire people who possess certain traits which they observe as beneficial. Those who do not possess these beneficial traits fail to become the new employees. Therefore, people who are looking to become new, successful industry employees should prepare themselves with the knowledge and skills listed in this study's findings and the beneficial traits that



participants never recognized as deficient because the screening process already accounted for them. This study worked to decrease the impact of this limitation by noting, when mentioned, the knowledge and skills companies assess to base their hiring upon and then comparing these knowledge and skills with the findings.

### **Findings**

Interviewees represented a variety of roles across the poultry industry, and also represented both male and female perspectives. All participants were college graduates with some holding master's and/or doctoral degrees. Participants represented a wide age range.

The responses to interview questions revealed knowledge and skills needed by entry-level employees in the poultry industry and also revealed whether entry-level industry employees currently possessed the knowledge and skills needed. Computer technology skills, mathematical skills, the ability to learn, and a basic understanding of poultry were all noted as knowledge and skills that poultry industry employees needed. These knowledge and skills were also identified as present in current industry employees. Additional knowledge and skills were found to be needed by employees but not found abundantly present in the industry's current work force. These knowledge and skills were interpersonal skills, communication skills, work ethic, and problem-solving skills. Regardless of grouping (i.e., industry and academic, male and female, experience level, industry focus, area of company), all participants expressed the importance of each of these areas, with the exception of a strong work ethic, which was identified mostly by

industry participants rather than by academicians. A participant coding list is available in Appendix E.

### **Computer Technology Skills**

Computer technology skills, from the perspective of the participants, included everything from computer skills (e.g., working with Microsoft Excel) to the computer systems that regulate and report flock statistics (e.g., water consumption, feed consumption, temperature, humidity, ventilation). Participants in both the academic and industry sectors expressed that employees are increasingly in need of these skills as the industry advances (A03-BDRy, A05-GR, I01-GE, I04-BPQ, I05-NE, I08-PQ, I09-PHy, I10-GM, I11-LMy, I12-NMy, I16-XH, I17-OEy). While some participants were skeptical as to whether new employees were thoroughly prepared in this category (A03-BDRy, I01-GE), most were pleased with the capabilities of current incoming employees.

### **Mathematical Skills**

Math skills were synthesized from the participants to include accounting, statistics, and financial understanding. Participants felt that employees needed these skills to work effectively (A03-BDRy, A06-DRy, I03-PE, I05-NE, I06-LMy, I07-XH, I09-PHy, I12-NMy, I13-LHy, I18-XHy). Math is used in many ways and in different contexts in agriculture. Failure to apply math could result in poor performance. Fortunately, participants also expressed that these skills were present at a capacity for their employees to work effectively. However, a few participants mentioned that improved math skills among incoming employees would serve them well (A03-BDRy, I05-NE, I13-LHy, I18-XHy). Entry-level employees often fail to recognize the financial

impact of each minor decision that managers must consider. Math is often a part of those decisions.

### **Ability to Learn**

The ability to learn, based upon participant comments, translated to employees' ability to adapt to a new environment and gain new information with a relatively short learning curve. While this is important in any new job, it was expressed repeatedly by participants, implying extreme importance within the poultry industry (A04-NRy, A07-BLRy, I03-PE, I10-GM, I12-NMy, I13-LHy, I14-BH, I15-BPMy, I16-XH, I17-OEy, I18-XHy). One manager expressed the importance of this skill by stating that he/she would "hire based [highly] on open-mindedness and the ability to learn" (I12-NMy). The ability to learn was mentioned by members of both industry and academia as being needed in industry employees. It was also generally accepted that the ability to learn was currently present in employees, except for two participants who mentioned that incoming employees lack "adaptability" (I03-PE, I16-XH).

### **Interpersonal Skills**

Interpersonal skills were synthesized from participant responses to describe an employee's ability to work with others to come to a compromise or work toward a common goal. This relates directly to communication as many of the interpersonal skills used in the industry involve convincing and influencing others to support your views.

The importance of interpersonal skills was expressed repeatedly during the interviews (A01-LRy, A02-PRy, A03-BDRy, I02-XH, I03-PE, I04-BPQ, I06-LMy, I07-XH, I08-PQ, I09-PHy, I10-GM, I11-LMy, I14-BH, I15-BPMy, I16-XH, I17-OEy, I18-

XHy, I19-OEy). Both industry and academia expressed that interpersonal skills had become an issue for entry-level employees. Although the industry is advancing with new technologies, dealing with people through the use of interpersonal skills remains an important component of the industry. Managers and supervisors reported that interpersonal skills are generally lacking in their employees (A01-LRy, A03-BDRy, I03-PE, I09-PHy, I10-GM, I11-LMy, I14-BH, I15-BPMy, I17-OEy, I18-XHy).

### **Communication Skills**

Communication, in the context of this study, is more than giving speeches or presentations. According to participants, communication is the ability to portray what you are feeling to others so that they will understand what you mean. This includes both oral and written communication.

According to participants in this study, employees in the industry are lacking the ability to “talk and deal with people” (A07-BLRy, I04-BPQ, I06-LMy, I13-LHy, I14-BH, I17-OEy, I18-XHy). This was expressed as a major concern by seven participants because it is integrated into nearly every job across the poultry industry. Without communication skills, employees cannot disseminate the thoughts that they develop for anybody else to use.

### **Work Ethic**

A strong work ethic was determined to mean an employee’s willingness to go beyond the bare minimum of what is required of them. In the poultry industry, this means working weekends as needed, willing to do manual labor as needed (i.e., physically working with the birds), and leading by example rather than telling others

what to do. This was heard repeatedly (I02-XH, I13-LHy, I17-OEy) in interviews as a need for entry-level employees because “birds do not take vacation” (I17-OEy).

Working in the poultry industry is a full-time job that requires sacrifice and often more than forty hours per week for the flock/farm to be successful.

Although work ethic was a high priority for managers and supervisors, many industry participants felt that work ethic was lacking in entry-level employees (A03-BDRy, I02-XH, I03-PE, I04-BPQ, I11-LMy, I12-NMy, I13-LHy, I15-BPMY, I18-XHy). One participant mentioned that he needed his employees to be willing to “get dirty” and sacrifice by “leaving home” if the company needed them to (I13-LHy). Another said that his/her employees “lacked humility” and thought that things should be handed to them rather than earned (I02-XH). Although one academic participant had heard of this problem in the industry and reflected on it in the interview (A03-BDRy), the other participants from academia either failed to mention work ethic or believed that it was present among entry-level employees.

### **General Poultry Knowledge and Skills/Basic Understanding**

General poultry knowledge and skills was synthesized from participant comments to include a basic understanding of what it takes to raise and care for poultry, and the process of preparing poultry products for market. According to the research participants, this basic understanding is helpful for employees to be effective in their roles. A basic understanding is used in almost all day-to-day duties as well as all problems that require attention. Participants also expressed that almost everybody hired is equipped with these knowledge and skills. This was perceived by both industry and

academic participants (A01-LRy, A02-PRy, A03-BDRy, A06-DRy, A07-BLRy, I01-GE, I03-PE, I17-OEy, I18-XHy, I19-OEy). There were three industry participants who thought that general poultry knowledge or a background in poultry was not necessary for success, but could prove beneficial (I02-XH, I04-BPQ, I15-BPMY). No participants stated that general knowledge was one of the more important characteristics of an employee. Although general poultry knowledge and skills can be found in most activities, it is rarely the prominent knowledge or skill being used in impactful industry situations.

### **Problem-Solving Skills/Deeper Understanding**

Problem-solving in the poultry industry was described to include both recognizing when something goes wrong and taking the proper steps to resolve the problem. According to both industry and academia members, problem-solving is essential to entry-level employees coming into the industry (A02-PRy, A03-BDRy, A07-BLRy, I01-GE, I05-NE, I07-XH, I08-PQ, I09-PHy, I12-NMy, I13-LHy). The jobs of new employees often revolve around finding problems and fixing them until they are familiar enough to prevent problems from happening. Many participants also expressed concern that employees lack the deep-thinking skills that allow them to think beyond observing what happened and begin figuring out why the problem occurred and how to fix it (A07-BLRy, I01-GE, I05-NE, I07-XH, I08-PQ, I09-PHy, I13-LHy).

### **Conclusions and Recommendations**

Findings synthesized from the 26 interviews led to conclusions about what is needed from entry-level employees in the poultry industry. I provide recommendations

for improvement to support a new industry workforce that is more capable than the previous. It is important for investments to be made at both the pre-employment college level and the post-employment industry level for improvements to be realized.

### **Computer Technology Skills**

Based on findings, I concluded that computer technology skills are both needed and present in the current workforce. As the industry becomes more technologically advanced, its employees will need to become more competent. This is reflected in Cook's (1990) study when he wrote that the poultry industry has become one of the most progressive and innovative agricultural industries due to its willingness to adopt new technology. Computer technology is not a skillset that is currently lacking or one that needs to be further developed in new employees to meet the industry's current needs. However, because of its importance, employees and future employees must continue building this skillset to address both the present and future industry needs.

It is recommended that educational programs continue to introduce and emphasize new and emerging technology to allow students an opportunity to enter the workforce as competent employees. This will give students an opportunity to apply computer technology skills to industry-type scenarios before they are needed in their future poultry industry careers.

### **Mathematical Skills**

Based on findings related to math, it was concluded that math is a skill needed by those who work in the poultry industry. According to Anderson (2012), agriculture is "an applied science and applied mathematics" (p. 8). Math is also a skill that is present

in the industry's current employees. However, it could be improved to expand past egg counts and measurements to understanding the financial implications of decreasing the number of checked eggs by purchasing an improved piece of equipment. Advanced financial understanding could benefit employees by allowing them to contribute to their company's end goal in each decision they make.

To gain these math skills, employees should receive math-related OJT for incoming employees. This would allow employees to revisit math concepts and learn to apply their math skills to actual scenarios in the poultry industry.

### **Ability to Learn**

Based on findings, I concluded that the ability to learn is a skill that is needed by those entering the poultry industry. Like in any new job, new employees must acquire knowledge and skills to improve and succeed. In the poultry industry, education must occur quickly in a vast number of different areas. Rarely does an employee have a single task on which they can focus all of their attention. This is reflected in Snetsinger's (1992) study on poultry science training. He stated that new employees must be sensitive to the new agendas of the industry and be able to obtain new skills to be effective industry leaders and managers (Snetsinger, 1992).

I concluded that this skill is present in most of the industry's new employees. I recommend that this skill continue to be sought by companies and developed by employees. If incoming employees continue to be made aware of industry expectations throughout their college programs and other educational programs, students would be prepared for all that they must learn after completing their formal education.



## **Interpersonal Skills and Communication Skills**

Based on findings, I concluded that both interpersonal skills and communication skills are needed by employees in the industry. This is supported by Crawford et al.'s (2011) article which stated that communication is one of the top three soft skills that students need to “transition from completion of baccalaureate degrees to competitive employment in agriculture” (p. 1). Without these skills, an employee will fall short of sufficiently completing many daily tasks and the more important jobs that employees in the industry face.

I also concluded that current employees are lacking in both interpersonal and communication skills. I recommend that both industry and pre-industry educational and training programs be generated to focus specifically on how to work and communicate with those with whom they often interact with and frequently work. Building these skills can have a tremendous effect on the employees' human capital, positively influencing both the individual and the company.

## **Work Ethic**

Based on findings, I concluded that a strong work ethic is highly important for employees in the poultry industry. I also concluded that this characteristic is lacking in those entering the poultry industry. Without a strong work ethic, division will arise in teams and bird flocks will be improperly cared for, resulting in decreases in efficiencies. This is a concern that has not found its way into many of the studies that evaluate the benefits of agricultural education programs (Ewing et al., 2014; Isbell, 2013; Lundry, Ramsey, Edwards, and Robinson, 2015; Meek & Tarlau, 2016).

Work ethic is a difficult skill for one to gain and equally as hard for one to show in a resume. Because this skill is attained over time, there is little that a company can do to improve its employees' work ethic. Therefore, I recommend that students be made aware of the industry's work ethic demands early in their education. One means of increasing awareness is through internships. Internships provide an opportunity for prospective employees to experience the work ethic demands in the industry prior to applying for a position in the industry. Increased awareness will allow students to develop a strong work ethic to meet the demands of their future occupation.

**General Poultry Knowledge and Skills/Basic Understanding  
and Problem-Solving Skills/Deeper Understanding**

Findings suggest that general poultry knowledge is helpful but not always necessary in the poultry industry. This was contradicted by the responses on problem-solving and deep thinking. The problem-solving findings suggest that a deeper understanding of poultry allows employees to become better problem solvers, something that is very much needed in the industry. This explains why agricultural education programs like the one studied by Phipps, Osborne, Dyer, and Ball (2008) work to encourage critical-thinking, decision-making, and problem-solving skills that are in demand by employers. These programs understand that deep thinking skills translate into the problem-solving skills that employees can use to make an impact on their company. However, to possess a deep understanding, one must first possess a basic understanding.

Many employees come into the poultry industry with a formal education in something other than poultry and without a poultry background. These employees lack a

basic understanding of poultry. Findings reveal that while supervisors are able to see value in employees who compensate for a lack of general poultry knowledge and skills with skills or competencies they may have, a deeper understanding is often needed for an employee to generate the problem-solving skills needed to succeed.

I recommend that youth educational programs continue to equip students with a basic poultry understanding which can be built upon, and search for ways to further equip students with a deep understanding. Bloom (1956) identified six levels of learning that a person goes through in his/her pursuit of knowledge. It should be the goal of individuals to excel through the first level (i.e., remembering) and into the higher levels (i.e., comprehending, applying, analyzing, synthesizing, evaluating). I also recommend that industry managers and supervisors recognize the value and importance that general poultry knowledge plays in developing the critical-thinking, decision-making, and problem-solving skills that employers are in search of (Phipps et al., 2008).

### **Recommendations for Future Research**

I recommend that future studies be conducted to evaluate the discrepancies and limitations of this study. The viewpoints of both supervisors and employees who work for supervisors are valuable. Capturing both perspectives would assist in uncovering any miscommunications in the understanding of employee expectations. The employee viewpoint would also unveil unrealistic expectations that supervisors could have of their employees. Factors such as employee screening before hiring should be evaluated. This could lead to a more reliable account of knowledge and skills needed to both enter and become successful as an employee in the poultry industry.

Future studies should also investigate the reasons that new employees are deficient in the knowledge and skills found in this study. Identifying what knowledge and skills are needed and missing in new industry employees is the first step in better preparing future employees. The next step of determining why these knowledge and skills are missing could lead to improved methods of teaching critical knowledge and skills and assisting prospective employees in obtaining these knowledge and skills.

### **Implications**

The results of the study provide an understanding of the knowledge and skills used in the poultry industry. The interviews conducted with professionals in both industry and academia provide insight into potential training needs for the overall poultry industry. Findings support the conclusion that certain knowledge and skills are more important for entry-level employees, and provides major implications when connecting this study's results to the theoretical framework.

When applying the theory of human capital to the poultry industry, we observe that the knowledge and skills identified in this study can add value to the industry's future entry-level employees. HC is increased through an investment in one's self or in others. The recommendations of this study reveal what investments should be made in order to increase the HC, and therefore the value of employees, companies, and the industry.

Both individuals and companies would benefit from HC gained prior to entry into the workforce. The company would experience a decreased need for investment in a new employee after he/she is hired. Time away from job-related tasks would be reduced

as that person's learning curve is shortened. The individual would be compensated for their investment by an increase in starting pay.

However, some knowledge and skills would be more effectively transmitted to employees after they are hired. These skills have greater retention when applied to actual industry context instead of conceptualized settings. Many math skills fall into this group.

Most knowledge and skills reported as useful for the poultry industry are gained prior to employment through formal school settings, experiences, and educational programs. These knowledge and skills should be invested in early and often to maximize value. They can be improved by emphasizing their importance and thereby increasing investment in these knowledge and skills over other knowledge and skills that were not found to be as important to the poultry industry. This emphasis can be completed most efficiently in programs dedicated to poultry science education, such as a collegiate poultry department or the FFA Poultry Evaluation CDE.

Soft skills (e.g., interpersonal skills, communication skills, problem solving skills) provide the most room for improvement due to their current deficiency in school and educational programs. Their absence is likely due to a slow transition to compensate for recent changes taking place in the industry. As the market shifted from manufacture-driven to service-driven, soft skills became more important. The industry's focus is about giving the consumer what he/she wants rather than producing the most product. This has increased interactions within the company and outside the company. An employee with an accumulation of interpersonal skills provides more value in his/her ability to motivate, compromise, and persuade.

I conducted this study with the idea that the findings and recommendations could be used to equip the poultry industry with better-prepared employees in the future. A more capable workforce will add value to the poultry industry by working more effectively across changes in the poultry industry. Employees will also be more involved in the future progress that affects the industry. By shrinking the learning curve of the employees, the growth curve for innovation is also accelerated. This can transition industry employees from maintaining a status quo within the poultry industry, to looking ahead and being prepared to contribute to increased progress.

## CHAPTER III

### TEXAS FFA POULTRY EVALUATION CAREER DEVELOPMENT EVENT AND ITS RELATION TO INDUSTRY: ARE WE MEETING INDUSTRY NEEDS?

The Texas FFA Association, a part of the National FFA Organization (FFA), is one of many youth agriculture organizations in Texas. As a means of preparing youth members for a future in agriculture, the FFA integrates leadership skills and technical employment skills into its programs (Ewing et al., 2014). CDEs are one set of FFA programs that expose youth to different agriculture industries. CDEs teach students knowledge and skills about a particular agriculture industry before testing those knowledge skills against each other and other teams in a contest format. The personal and technical skills that students earn will stay with them and provide a strong foundation should they pursue a career in the agriculture area of the CDE in which they participated.

The Texas FFA Association conforms to most of The National FFA Organization's Poultry Evaluation CDE rules. The Texas FFA Poultry Evaluation CDE comprises 11 activities, each requiring unique knowledge and skills (Texas FFA Association, 2017). The production and products of meat-type broiler chickens make up 5 of the 11 activities of the Poultry Evaluation CDE. The Market Broilers for Placing activity tests students' skills and abilities to place live birds in order from most meaty to least meaty based on external quality characteristics. The Poultry Carcasses/Parts for Grading activity tests students' skills and abilities to determine the correct grades of broiler carcasses based on external defects that are determined by the published United

States Department of Agriculture (USDA) standards. The Poultry Carcasses for Placing activity tests students' skills in placing poultry carcasses using both grade and size characteristics. The Boneless Further-Processed Products for Evaluative Criteria and Bone-In Further-Processed Products for Evaluative Criteria activities test students' abilities to identify external quality defects in further processed poultry meat products. The production of eggs and egg-type hens make up 4 of the 11 activities of the CDE. The Egg-Type Hens for Placing activity tests students' skills to place live birds in order of most productive hen to least productive hen based on external quality characteristics. The Shell Eggs for Interior Quality Grading activity tests students' abilities to determine the interior quality grade of shell eggs based on USDA-defined characteristics. The Shell Eggs for Interior Quality Grading, and Evaluative Criteria for Exterior Quality Grading activities test students' skills in identifying exterior defects in shell eggs. The Poultry Carcass Parts for Identification activity tests students' knowledge of poultry anatomy by asking them to identify different cuts of a poultry carcass. The Written Examination activity of the CDE is used to test students' knowledge of poultry and the poultry industry. The sections of the test include: Production Segments of the Poultry Industry, Careers in the Poultry Industry, Anatomy and Physiology of the Fowl, Poultry Embryology, Poultry Health Management, Poultry Waste Management, Poultry Environmental Control Management, Poultry Genetics, Poultry Nutrition, Processing Poultry Products, Marketing Poultry Products, Poultry Hatchery Management, Market Broiler Management, Market Turkey Management, Egg-Strain Pullet and Hen Management, and Additional Poultry Enterprises and Products.



The skills and educational information of the CDE are well established. Changes to the CDE are allowed every 5 years. However, these changes are minimal compared to changes that the poultry industry has made in recent years. The most significant industry advancements have been in breeding, nutrition, management, disease control, further processed products, and consumer marketing (Cherian, 2013, & Snetsinger, 1992).

The Poultry Evaluation CDE was developed by an experienced committee of industry and academic professionals. This ensured that the information being taught is accurate and correct (Instructional Material Services, 2012). However, relevance of the material to industry has not been verified fully, and the poultry industry is constantly evolving. Many industry changes have come in the form of technological improvements (Cook, 1990; Pelletier, 2014). For the CDE to properly prepare students for the industry, the CDE must reflect these changes. Having students learn knowledge and skills that they will never use in the new and innovative industry serves them no purpose. Further, failing to provide important knowledge and skills that employees need in the poultry industry results in a wasted opportunity to prepare students.

## **Literature Review**

### **Career and Technical Education**

Lundry et al. (2015) wrote that career and technical education (CTE) should focus on content designed to meet the needs of the labor market. Agricultural education is a part of CTE; therefore, one of its primary purposes should be to develop the knowledge and skills necessary for successful employment in the agricultural industry,

including career entry and career advancement (Lundry et al., 2015). CDEs have a similar purpose:

Career Development Events build on what is learned in agricultural classes and encourage members to put their knowledge into practice. These events are designed to help a member prepare for a career in agriculture by testing and challenging the student's technical, leadership, interpersonal and teamwork skills as well as their knowledge of the subject matter. CDEs answer the question, "When will I use this knowledge in the real world?" (Texas FFA Association, n.d., "Overview," para. 1).

### **Poultry Science Education**

Bloom (1956) wrote about six levels of learning that students go through in their search of new knowledge and skills. Effective education helps individuals exceed the first learning level (i.e., remembering) and venture into the higher levels (i.e., comprehending, applying, analyzing, synthesizing, evaluating) where their knowledge and skills can prove more useful. Vizzier Thaxton et al. (2003) concluded that poultry science education in the United States has failed to address current industry concerns, and therefore lacks the ability to prepare students at the university level for the new, innovative poultry industry. For more than a decade, poultry departments and student numbers have been decreasing (Beck, 1992; Vizzier Thaxton et al., 2003).

## **Career Development Event Benefits**

Research has documented that CDEs have a positive impact on students in many ways (Isbell, 2013; Marx et al., 2014; Phipps et al., 2008). Isbell (2013) compared participants of a similar program of Texas 4-H to nonparticipants in the program. She concluded that the benefits of the program ensured that a very practical set of skills were being developed by the participants. Lundry et al. (2015) showed that 89% of responding agricultural education teachers agreed that CDEs provide real-world experiences. Seventy-nine percent agreed that participants gained technical agriculture skills.

In a study about food systems education, Meek and Tarlau (2016) acknowledged the existence of educational programs that involve learning about how food is grown and that promote healthier consumer choices. These are some of the most easily recognizable ideas found in the food systems industry. However, the researchers continue by writing that this is inadequate. Food systems education needs to promote a radical critique of the current state of global food production, and link that critique to the movements that are struggling to transform this system. Similar observations were described in the poultry industry. Snetsinger (1992) wrote that employees are being asked to complete a different and more diverse set of tasks than those of decades ago.

An extensive review of the literature revealed no solid evidence that connects the poultry industry's need for educated, skillful, and competent employees to the assumption that the skills taught through FFA's CDEs effectively translate to the poultry industry. The belief held by agricultural education teachers that the skills will translate/are useful in industry has not been confirmed through research. The literature

has called for such studies to be conducted. Lundry et al. (2015) recommended that studies be conducted to determine the long-term career benefits of participation in CDEs. It is imperative that these studies continue to be conducted to separate assumptions from reality.

### **Theoretical Framework**

This research was framed using the theory of human capital. Human capital (HC) is the stock of knowledge and characteristics that contribute to an individual worker's productivity (Acemoglu & Autor, 2011). A person's HC may consist of capabilities, knowledge, training, ability, and experiences. It may also include one's ability to add these characteristics to their stock (Vargas, Lloria, & Roig-Dobon, 2016).

#### **General Human Capital**

The two recognized forms of HC are general human capital (GHC) and firm-specific human capital (FSHC). GHC can be used in many different contexts to increase worker productivity. Schools are often a source of GHC knowledge and skills. The addition of GHC by schools occurs prior to employment, which means that companies have little to no control over GHC. The company controls their employees' GHC level by hiring those who meet their requirements (Lazear, 2009). If an applicant is below the GHC level that a company is seeking, that applicant is not hired. GHC can be transferred from job to job and used in most contexts. This makes it easier for employees with a high amount of GHC to switch companies (Raffiee & Russel, 2016). GHC is affected by multiple sources such as innate abilities, amount of schooling, and school quality (Acemoglu & Autor, 2011).

## **Firm-Specific Human Capital**

The second type of human capital is firm-specific human capital (FSHC). FSHC is often acquired during on-the-job-training (OJT), which is provided by the company. OJT can include both GHC and FSHC, but will usually consist of more knowledge and skills that are specific to the company doing the training. FSHC has limited value once an employee leaves the company, and is lost when an employee switches companies. (Raffiee & Russel, 2016).

## **Investments**

The investments that a person makes and investments that are made by a company constantly change the individual's total HC. Both the individual and the individual's employer make investments to improve his/her HC in many ways (Acemoglu & Autor, 2011). Time, money, and effort are invested by individuals to increase capital in themselves to increase wages or achieve a higher working position. An individual's investment is almost always made to increase his or her GHC. Increasing GHC increases competition for a worker's services when looking at multiple jobs (Lazear, 2009). Companies invest time and money in their employees for reasons that are different from an individual's investment of time and money. Companies look to create value for themselves through the work of a group of individuals. This is done after building the abilities and talents of those individuals through investments (Vargas et al., 2016). Most of these investments go towards improving FSHC through OJT (Raffiee & Russel, 2016).

A company would rather improve FSHC than GHC. If this capital is lost, due to the employee leaving the company, it will not follow the employee to a competing company. However, not all HC gained through OJT is FSHC. If individuals are hired without the needed GHC, the company will invest in this during OJT (Lazear, 2009). Often, this will result in the underqualified employee being paid less to make up for the company's future investment. An individual would rather improve his/her GHC than their FSHC. He/she will likely be compensated for his/her GHC investment, and his/her value will be carried with him/her if he/she changes companies.

### **Water Glass Analogy**

Consider a glass of water which when filled represents great value for an individual in the form of HC. A company prefers their employees have full glasses. The individual can add water to his/her glass from the GHC pitcher. A company can also add to the individual's glass from a GHC pitcher, or the company can add to a different glass from a FSHC pitcher. The individual can borrow the water from the second glass, but must put it back if he/she leaves. Given the choice, the individual should focus on pouring water from his/her own GHC pitcher rather than attempting to get water from one of the company's pitchers. This will result in his/her glass filling up more quickly and staying full no matter where he/she goes (Acemoglu & Autor, 2011; Raffiee & Russel, 2016).

### **Summary**

Both GHC and FSHC are important. However, the company would benefit from investments in GHC made by the individual prior to employment. This would save the

company investments in GHC that are normally made after hiring. Companies could then make their investments solely in FSHC through OJT. This study observed sources of GHC to be gained by students for industry preparation (Acemoglu & Autor, 2011).

## **Methods**

This study used qualitative methods in the form of in-depth interviews with knowledgeable participants from industry and academia. Appendix A presents a copy of IRB approval.

### **Qualitative Research**

Qualitative studies search to answer “why” somebody does something or “why” something happens (Barnham, 2015). This study addressed why the poultry evaluation CDE meets or fails to meet the employment needs of the poultry industry. Researchers are almost always following up the question of “what” by asking “why” (Barnham, 2015).

Barnham (2015) suggested that researchers evolve to answering “how” with qualitative techniques rather than just “why.” Answering “how” always begins in the interview process. It then continues in the absence of the participant in the analysis stage. After the study, I made recommendations for “how” the CDE could be improved to meet the needs of the industry.

### **Sampling**

I chose participants using a snowball sampling technique. Babbie (1989) explained this technique as beginning with a set of original interviewees. These participants then recommended additional interviewees based on their knowledge of the

industry. These recommendations were used to contact new participants until data saturation was reached. A copy of the email script to academic and industry potential participants is located in Appendix B. The initial interviewees of this study consisted of executives and production managers of several sectors of the poultry industry (e.g., broiler production, egg production, processing) and members of academia of several different focuses (e.g., nutrition, egg production, processing). I contacted additional individuals (e.g., human resource coordinators, supervisors, and other managers) based on the initial interviewees' recommendations. The participants represented most of the different poultry industry sectors. Participants familiar with live production (e.g., broiler meat and egg-type hen) and plant and feed mill sectors responded to interview questions. Perspectives from all levels of management across the poultry industry was sought. A total of 26 interviews were conducted over a period of three months. The 26 participants consisted of 7 academic faculty and 19 industry professionals; 15 participants were determined to possess notable years of experience and 11 did not; 9 participants were female and 17 were male; 17 participants possessed knowledge of the CDE and nine had no knowledge of the CDE.

### **Interviews**

To allow follow-up questions, I used semi-structured interviews. I briefly explained the reason for the interview and the research study at the beginning of each interview. I was careful not to lead the interviewee. A typical interview question included:

- 1) What knowledge and skills are identifiable in the CDE curriculum?



- 2) Of the knowledge and skills being taught through the CDE curriculum, which are more important to the needs of the poultry industry?
- 3) Of the knowledge and skills being taught through the CDE curriculum, which are less important to the needs of the poultry industry?

The interview protocol is located in Appendix C.

### **Analysis**

Using the constant comparative method (Lincoln & Guba, 1985), I analyzed the semi-structured interviews. Interview responses were analyzed and compared throughout the entire study rather than waiting until the conclusion of data collection. Categories were developed as new responses began to match previous responses. I gained an understanding of the properties and characteristics that made up the underlying trends and themes of each category by constantly comparing the data as they were collected. Peer debriefing aided in the data analysis. This led to positive impacts for both the data collection and the data analysis categorization (Lincoln & Guba, 1985).

### **Limitation of the Study**

This study was scrutinized before, during, and after data collection. A limitation was that not all participants were familiar with the CDE. This study focused on industry application of CDE knowledge and skills by interviewing those with prominent industry knowledge. Most (16) participants were knowledgeable about both the poultry industry and the CDE. This often resulted in more detailed responses related to how improvements could be made or why improvements were not needed. Nine participants were less familiar with the CDE or had never heard of it. These participants relied on the

researcher's explanation of the CDE to decide whether the CDE would translate useful knowledge and skills to students. A copy of the CDE explanation sheet that was used is located in Appendix D. These participants provided limited input.

### **Findings**

This study focused on determining what improvements could be made to the Texas FFA Poultry Evaluation CDE curriculum to effectively address industry needs. Industry needs were assessed in the article entitled, *A Qualitative Analysis of Industry Perspectives Regarding United States Poultry Industry Skill Needs*. The findings show that no consensus could be made among participants on which CDE activities were most important and should be emphasized or which activities were less important and should be dismissed from the curriculum. There were, however, many responses that called for placing emphasis on more important knowledge and skills and additional knowledge and skills to be added to the CDE.

Participants included both males and females, were a variety of ages, and represented diverse roles across the poultry industry. All participants were college graduates with some individuals holding master's and/or doctoral degrees. Most (17) participants had heard about the CDE with some (A01-LRy, A03-BDRy, I12-NMy) being very familiar and closely connected to the curriculum. Nine participants had never heard of the Poultry Evaluation CDE (I02-XH, I04-BPQ, I05-NE, I06-LMy, I11-LMy, I13-LHy, I14-BH, I17-OEy, I19-OEy).

This study found that a majority of those interviewed expressed that there was room for curriculum improvement in communication skills, team collaboration skills,

bird health knowledge and skills, computer technology skills, exposure to career options, and deeper understanding. Regardless of grouping (i.e., industry and academic, male and female, experience level, industry focus, or area of company) all participants expressed the importance of each of these areas. A participant coding list is available in Appendix E.

### **Communication Skills**

One participant (I12-NMy) portrayed the major importance of students learning communication skills to “sell your idea” to their future colleges and supervisors. Communication was a dominant theme for both industry and academic participants as it was recognized as being closely related to interpersonal skills as well as deficient in the industry and inadequately present in the CDE (A01-LRy, A02-PRy, A03-BDRy, A04-NRy, A07-BLRy, I01-GE, I04-BPQ, I05-NE, I06-LMy, I12-NMy, I13-LHy, I14-BH, I18-XHy).

### **Team Collaboration Skills**

Team collaboration was synthesized by participant responses as working in conjunction with others toward a common goal through healthy relationships. Participants expressed their beliefs that teamwork was present in the curriculum. However, because it is essential for industry employees to work as a team, five participants expressed that this area could be improved (A02-PRy, I02-XH, I07-XH, I12-NMy, I14-BH).

### **Bird Health Knowledge and Skills**

Bird health, based on participant descriptions, was defined as the knowledge needed to recognize when a bird or flock is having health problems, as well as healing and preventing the bird or flock from morbidity or mortality. This was expressed as being present in the CDE curriculum. However, due to the increasing importance of bird health in the poultry industry, five participants (A06-DRy, A07-BLRy, I06-LMy, I11-LMy, I14-BH) expressed that this area should be improved and expanded.

### **Computer Technology Skills**

Participants identified a lack of computer technology skills related to the poultry industry. Participants expressed that if students failed to keep up with technological changes, they would not be prepared for the modern poultry industry (A03-BDRy, A05-GR, I04-BPQ, I09-PHy, I10-GM, I12-NMy). When compared with the poultry industry of the past, the modern poultry industry relies on computer software programs and house management computer systems. One academic participant shared that students do eventually receive some computer systems knowledge in college, but that it would prove very useful to prepare students with an earlier introduction to this topic (A03-BDRy). Two participants suggested that multiple CDE activities had potential for incorporating technology knowledge and skills in ways that were applicable to the industry (A03-BDRy, I10-GM).

### **Career Options Knowledge**

According to participants, exposure to vast career options would mean that many of the people entering or preparing to enter the industry would become more aware of

the many opportunities and responsibilities that the poultry industry has to offer. This was conveyed by participants who opined that students should be taught more about the “wide variety of opportunities” in the industry (I14-BH) and that they should “understand the amount of career options available” (I09-PHy). Another added “exposure” would give them a head start and lessen the learning curve of new employees (I11-LMy). One participant expressed displeasure with the CDE by stating that it was “preparing students for some parts of the industry, but not all parts” (I15-BPMy). Both academia and industry agreed that increased exposure to career options would be a positive change (A05-GR, I04-BPQ, I09-PHy, I12-NMy, I14-BH, I16-XH).

### **General Poultry Knowledge and Skills/Basic Understanding**

There were many concerns from both industry and academic participants about the range of knowledge and skills needed. However, all participants, apart from one (I01-GE), were confident that the CDE curriculum was providing students a basic understanding of poultry and the poultry industry. Basic understanding was synthesized to mean the minimum knowledge needed to sufficiently identify industry products and processes. Basic understanding was quoted as being a “stepping stone” (I06-LMy), “starting point” (I08-PQ), and “giving a leg up” (I05-NE) when compared to those without it.

### **Problem-Solving Skills/Deeper Understanding**

Proceeding from a basic understanding, a deeper understanding would allow students to be more prepared for a career in poultry by understanding how and why things occur in the poultry industry. A common theme across both industry and

academia – expressed by seven participants – was the opinion that students are well-equipped with a basic understanding of general poultry knowledge and skills, but lacked deeper understanding (A02-PRy, A03-BDRy, A05-GR, I03-PE, I05-NE, I08-PQ, I11-LMy).

Participants expressed that students are missing opportunities to “think bigger” (A05-GR) and understand “how and why things are happening” (A07-BLRy). These processes require a deeper understanding. Many participants did believe that problem-solving skills were being gained (A01-LRy, A02-PRy, A07-BLRy, I01-GE, I02-XH, I07-XH, I09-PHy, I12-NMy, I13-LHy, I15-BPMy). However, if improvements were made to transform basic understanding to deeper understanding, students’ problem-solving skills could be further improved. This idea was emphasized in the previous article, *A Qualitative Analysis of Industry Perspectives Regarding United States Poultry Industry Skill Needs*.

### **Conclusions and Recommendations**

I concluded that the Texas FFA Poultry Evaluation CDE includes many beneficial qualities that help prepare students for a career in the poultry industry. In fact, all CDE activities were found beneficial in some aspect and should remain as part of the CDE. It was also apparent that there is room for improvement in the form of specific emphasis of current topics and the addition of new topics. This study identified the areas of improvement (i.e., communication skills, team collaboration skills, bird health knowledge and skills, technology skills, career options knowledge, general poultry knowledge and skills, basic understanding, problem-solving, and deeper understanding).

## **Communication Skills**

Based on findings, I concluded that communication should be a major learning concern for the CDE. In the article entitled, *A Qualitative Analysis of Industry Perspectives Regarding United States Poultry Industry Skill Needs*, I found that communication plays a major role in the poultry industry. For any CDE to develop knowledge and skills for future careers in agriculture, as they are meant to do, it should teach the knowledge and skills that are of most concern. To cover the highly important area of communication, I recommend that the CDE have an activity devoted primarily and specifically to the development of this skill.

Texas is one of the many states that does not have an “oral reasons” activity in its Poultry Evaluation CDE (Texas FFA Association, 2017). The reason is that the Texas CDE has a large number of participants. Texas has the largest FFA membership, with more than 200 students competing in the state Poultry Evaluation CDE (JudgingCard, 2017). This makes it difficult to include a communication activity because an oral reasons activity takes two minutes per student performance. This additional 400 minutes for the CDE would require an increased number of qualified judges to listen to the students present (Poultry, 2016).

However, communication skills may have the most significant impact on students’ futures, due to the transferability of those skills; thus, a variation of the oral reasons activity should be implemented to teach students these valuable skills. The California FFA has the second largest student membership. Its CDE includes an oral reasons activity (California Agricultural Teachers’ Association, 2014), as does Georgia,

with the third largest student membership (Georgia FFA Association, 2017). One suggestion is to replicate the Ohio FFA, with the fifth largest student membership, by splitting the CDE into 2 days (Ohio FFA, 2016).

### **Team Collaboration Skills**

Findings related to team collaboration made it clear that teamwork is occurring in relation to the CDE. However, it is occurring largely either before the CDE, in the form of practice, or during the CDE, in the form of team spirit. An important part of working with a team, collaboration, is missing. Collaboration is defined as jointly working with others, especially in an intellectual endeavor (Merriam-Webster.com, 2017). This translates to team members working together (e.g., communicating, persuading, compromising) to solve a problem—not working nearby each other and giving support.

Like communication, team collaboration is practiced in other states and at the national level, but not in Texas. The National FFA Poultry Evaluation CDE does this through a “team activity” (Poultry, 2016). Although team collaboration was not found to have the same importance as communication, it could be easier to implement.

Thus, I recommend that a team activity be included in the Texas CDE to build team collaboration skills thought to be useful in the poultry industry and not currently taught through the Texas version of the Poultry Evaluation CDE.

### **Bird Health Knowledge and Skills**

Since the recent outbreak of HPAI across the United States (Pantin-Jackwood, Stephens, Bertran, Swayne, & Spackman, 2017), the entire poultry industry has increased its biosecurity measures to ensure that birds remain safe and healthy. As a



result, knowledge about these new biosecurity measures and diseases has become increasingly important.

Currently, only a small portion of the “written examination” activity is devoted to the development of bird health knowledge in the CDE curriculum. Based on findings, this is not sufficient to fulfill industry needs of new employees. To increase bird health knowledge, students should be developing a deeper understanding and broader skillset. This can be achieved by implementing an activity focused on the recognition of disease signs and methods for prevention. This would be unprecedented in the poultry evaluation CDE but could be immensely beneficial in reducing the amount of financial downfall contributed to HPAI.

### **Computer Technology Skills**

Based on findings, the portions of the CDE that cover emerging technologies in the poultry industry are insufficient to meet the needs of students wishing to prepare themselves for a career in the poultry industry. The computer technological knowledge and skills that students are learning comes from information that could be updated to reflect industry change and progress. In addition to upgrading the current information, knowledge about new technologies that is not currently present should be included in the curriculum. This is reflected in Cook’s (1990) study when he wrote that the poultry industry has become one of the most progressive and innovative agricultural industries due to the willingness to adopt new technology.

Due to technology advancements and the importance that the industry places on its employees understanding this computer technology, I recommend that changes be

made to include emerging technologies. These changes should be incorporated into various CDE activities and the current technological information found in the written examination activity should be upgraded.

### **Career Options Knowledge**

Based on findings, I concluded that educating young students about the vast career opportunities in the poultry industry needs to be a priority. The industry is much larger and more diverse than most would believe it to be. Many jobs in the industry require a particular interest found more easily outside of poultry. Someone interested in both microbiology and poultry may never pursue a career in poultry simply because they were not aware of the microbiologist careers available in the poultry industry.

The poultry evaluation CDE curriculum has a section of the written exam devoted to careers in the poultry industry. Findings were that students are not thought to be gaining a comprehensive view all that the industry has to offer. I recommend that the written exam section be expanded to properly educate students, and more diverse activities be introduced to emulate the varying parts of the poultry industry. As a result, students with vast interests would find a place in the poultry industry where they can succeed.

### **General Poultry Knowledge and Skills/Basic Understanding and Problem-Solving Skills/Deeper Understanding**

Based on findings, I concluded that the students involved in the CDE are gaining a basic understanding of poultry and the poultry industry needed to be successful as an employee. This basic understanding is what employees use to identify problems in the

industry, as well as decrease the learning curve as employees learn new job specific information. The findings also lead to the conclusion that although some decision making and problem-solving skills are being disseminated to students, deeper understanding is not being obtained through the CDE. Participants of this study are the same managers and supervisors who will eventually employ some of these students. Participants expresses that the curriculum fails to provide a deep understanding.

There are many aspects of the job that a basic understanding falls short of satisfying. One of the most important aspects is the skill of problem-solving. Resolving issues is a known part of everyday duties for employees in the poultry industry. The ability to solve problems quickly and efficiently separates quality farms from low-quality farms, and quality employees from low-quality employees.

To solve a problem, employees must know more than just what happened. They must understand how and why it happened. This type of knowledge goes beyond a basic understanding. Agricultural education programs like the one studied by Phipps, Osborne, Dyer, and Ball (2008) work to encourage the critical-thinking, decision-making, and problem-solving skills that are in demand by employers for that very reason.

I recommend that the curriculum be adapted to develop the deeper thinking skills that translate into the problem-solving skills demanded by industry supervisors. These skills are taught by helping students understand why things happen. According to Bloom (1956), there are six levels of learning that a person goes through in his/her pursuit of knowledge. The first level (i.e., remembering) is found abundantly in the CDE. To improve the CDE, an effort should be made to help students reach the higher levels of

learning (i.e., comprehending, applying, analyzing, synthesizing, evaluating). One method of teaching this is by importing problem-solving situations and current industry issues and applying them to the other knowledge and skills taught. The result could be a deeper understanding by future employees; they would also have the ability to both solve and prevent future problems.

### **Recommendations for Future Research**

Future studies should be conducted to evaluate the limitations of this study. When participants are not familiar with both the poultry industry and the CDE, they lack the knowledge needed to make connections between the two. By interviewing only those who are familiar with both the industry and the CDE, all responses would be thoughtful and considerate. This could prevent the dilution of well-developed, knowledgeable responses with shallow, uninformed responses. These knowledgeable participants could also be presented a video tutorial over the CDE to refresh their memory about activities. Future studies should also search to understand the impact of the CDE environment and CDE preparation. This study focused on the curriculum content of the CDE. Students gain knowledge and skills by learning the curriculum knowledge, practicing the curriculum skills, preparing as a team, and competing as a team at the event. Therefore, the CDE should be more thoroughly evaluated by examining all aspects rather than just the curriculum. This may involve interviewing students who participate in the CDE and teachers who coach CDE teams. By focusing on the specific participants and expanding the focus of a study on CDEs, future studies could provide a more extensive representation of the knowledge and skills being translated to students.

I also recommend that research be conducted to identify the effectiveness of the National FFA Poultry Evaluation CDE to evaluate whether the implementation of oral reasons and team activity have proven effective. I recognize that each state deals with unique problems and scenarios. Not everything that works for one state will work for a different state. Throughout this research, I have focused on what needs to be improved, rather than how to improve it. However, by developing a practical method for applying the research findings, agricultural education programs will be more likely to implement changes for improvement.

### **Implications**

The results of the study provide an understanding for the knowledge and skills gained through participation in the Texas FFA Poultry Evaluation CDE. The data in this study were provided by industry-leading participants for determining knowledge and skill relevance in an industry setting. Findings led to the conclusion that certain knowledge and skills should be emphasized and added to the Texas FFA Poultry Evaluation CDE, which yields implications when connecting the findings to the theoretical framework as a value to the future poultry industry employees.

Findings can be used to increase students' human capital for the benefit of themselves and the poultry industry. The source of HC evaluated in this study (i.e., school quality), can be improved by adapting a piece of agricultural curriculum, the CDE handbook, to fit the needs of the industry, of which students are attempting to prepare. According to conclusions, the CDE is advertised as a tool that can be used to prepare students with knowledge and skills needed to be successful in the poultry industry, thus

increasing their HC. However, based upon findings this may not be entirely accurate. Time and effort invested into the CDE should properly equip students with the knowledge and skills needed for the poultry industry. It appears that the Texas FFA Association should reevaluate the program to ensure the opportunity to invest in the appropriate knowledge and skills.

To resolve this issue, I made recommendations to incorporate the appropriate knowledge and skills into the current CDE. The knowledge and skills that will provide the highest value for students as future poultry industry employees include communication skills, team collaboration skills, bird health knowledge and skills, computer technology skills, career options knowledge, and problem-solving skills. Each of these areas should be addressed.

The inclusion of opportunities to gain communication skills and team collaboration skills provide the greatest opportunity for improvement due to the absence of these opportunities from the current CDE. Examples of activities to teach (i.e., communication activities and team collaboration activities) can be found in the National FFA CDE and in the CDEs of many other states. The Texas FFA Association could use these activities as a starting point for the CDE activities that it has chosen not to include. I recognize that communication and team collaboration activities require certain elements that make these activities difficult for the Texas FFA Association to implement. However, the lack of inclusion of these opportunities from the CDE deprive students of skills that could increase students' value in the job market, and benefit the poultry industry.

## CHAPTER IV

### SUMMARY AND CONCLUSIONS

The poultry industry, like most agricultural industries, has seen many changes in recent years. These changes have translated into employees being expected to perform a variety of new tasks. Managers and supervisors seek out certain traits in employees to cope with these new tasks. Improvements in employee preparation must be made to reflect industry changes. High school and college educational programs are large contributors to employee preparation and must adapt to prepare students for the new, innovative, and rapidly-changing poultry industry.

#### **Knowledge and Skills Needed in the Poultry Industry**

The first study offered evidence that employees coming into the poultry industry lack important knowledge and skills. I found that some of the areas noted as being important by interview participants were also areas in which new employees struggled. For example, interpersonal skills were noted as being extremely important by participants because of the repeated and vast use of these skills on a day to day basis. It was also found that most entry-level employees do not possess the interpersonal skills needed to excel in the industry. Additional knowledge and skills expressed as necessary included communication skills, a strong work ethic, and problem-solving skills. I recommend that improvements be made to prepare individuals with these skills prior to industry employment.

### **When to Build This Knowledge and Skills**

Once employed, the burden of equipping employees with the preferred knowledge and skills is transferred to the industry. There are multiple ways that individuals can build each of these knowledge and skills before beginning their careers in the industry. I recommend that improvements be made at adolescence when the mind is first capable of a “higher-order level of reasoning superior to earlier childhood thoughts” (Bastable & Dart, 2008, p. 22). At the adolescent learning level, students can use reason both inductively and deductively, hypothesize and apply principles of logic, and conceptualize ideas (Aronowitz, 2006; Vander Zanden et al., 2007, as seen in Bastable & Dart, 2008). This would enable students to build a strong foundation of poultry knowledge and begin gaining a deeper understanding through an improved curriculum that matches the focus of the industry.

This study focused on skills and knowledge needed by college educated, entry-level employees of the poultry industry. This group of individuals are often in young adulthood, and are becoming problem centered, rather than subject centered. This, combined with an increased reservoir of previous experience and a peaking cognitive capacity, results in sustained knowledge through applicable learning (Bastable & Dart, 2008; Knowles, 1990). However, learning at the college level would be further improved if it were supported by a foundation of poultry knowledge at the pre-college level.

### **Poultry Evaluation CDE as Avenue for Knowledge and Skill Education**

The second study revealed that the Poultry Evaluation CDE effectively introduces general knowledge to high school students about poultry and the poultry



industry. However, the goal of preparing students for a career in the poultry industry is left unfulfilled. Through interviews with industry leaders, I found that the poultry industry participants thought that improvement in the CDE curriculum was both possible and necessary. Participants identified communication skills, team collaboration skills, bird health knowledge and skills, computer technology skills, exposure to career options, and deeper understanding as areas that need improvement.

### **Poultry Evaluation CDE Improvements**

These findings suggest that multiple activities could be added to the CDE, including a communication and team collaboration activity. A section devoted completely to current and emerging technologies would also be valuable to students. Further, current CDE section involving the vast industry career options should be revamped and emphasized. A deeper understanding of the information taught could be emphasized throughout the CDE to improve applicable problem-solving skills.

One example of how the CDE could be improved can be illustrated in the CDE's Further Processed Products activity. Students could gain knowledge and skills behind the ability to identify defects in poultry products. If students were instead asked to both identify defects and develop a reason for why the defects occurred and/or how to fix the problem, students would be gaining a deeper understanding and practicing problem-solving and communication skills. The development of this type of knowledge and skill learning opportunity would be an improvement in developing students into career ready employees. I recommend that changes to enhance the CDE be made in the coming years to better serve the poultry industry and prepare students for the job market.

## REFERENCES

- Acemoglu, D., & Autor, D. (2011). *Lectures in labor economics*. Retrieved from <http://economics.mit.edu/files/4689>
- Alan, K. M. A., Altman, Y., & Roussel, J. (2008). Employee training needs and perceived value of training in the Pearl River delta of China: A human capital development approach. *Journal of European Industrial Training*, 32(1), 19-31. doi:10.1108/03090590810846548
- Anderson, R., & Anderson, S. (2012). Emerging themes in integrating mathematics into agricultural education: a qualitative study of star teachers in Virginia. *Journal of Career and Technical Education*, 27(2). doi:10.21061/jcte.v27i2.556
- Babbie, E. (1989). *The practice of social research*. Belmont, CA: Wadsworth Publishing Company.
- Bancio, R. & C. Zevalkink. (2007). Soft skills: the new curriculum for hard-core technical professionals. *Connecting Education and Careers* 82(5). Retrieved from <https://eric.ed.gov/?id=EJ764824>
- Barnham, C. (2015). Quantitative and qualitative research: Perceptual foundations. *International Journal of Market Research*, 57(6), 837-854. doi:10.2501/IJMR-2015-070
- Bastable, S., & Dart, M. (2008). Developmental stages of the learner. In S. Bastable (Ed.), *Nurse as educator: Principles of teaching and learning for nursing practice* (pp. 1-52). Sudbury, MA: Jones and Bartlett.

- Bloom, B. S. (1956). *Taxonomy of educational objectives; the classification of educational goals*. New York: Longmans and Green.
- Bradley, F. A. (1988). Future role of youth programs. *Poultry Science Journal*, 67(6), 886-889. doi:10.3382/ps.0670886
- California Agricultural Teachers' Association. (2014). Poultry judging. *CATA Curricular Activities Code*. Retrieved from: <http://www.calagteachers.org/CurricularActivitiesCode.html>
- Carlson, C. W. (1972). What's next?. *Poultry Science Journal*, 51(1), 3-9. doi:10.3382/ps.0510003
- Cook, R. E. (1990). Introduction. *Poultry Science Journal*, 69(12), 2102. doi:10.3382/ps.0692102
- Crawford, P., Lang, S., Fink, W., Dalton, R., & Fielitz, L. (2011). Comparative analysis of soft skills: What is important for new graduates?. Retrieved from [http://www.aplu.org/members/commissions/food-environment-and-renewable-resources/CFERR\\_Library/comparative-analysis-of-soft-skills-what-is-important-for-new-graduates/file](http://www.aplu.org/members/commissions/food-environment-and-renewable-resources/CFERR_Library/comparative-analysis-of-soft-skills-what-is-important-for-new-graduates/file)
- Ewing, J. C., Clark, R. W., & Threton, M. D. (2014). Career development event preparation and experiential learning strategies employed by Pennsylvania secondary agricultural education teachers. *Career and Technical Research*, 39(1), 37-53. doi:10.5328/cter39.1.37
- Georgia FFA Association. (2017). *Poultry evaluation – senior CDE*. Retrieved from: <http://www.georgiaffa.org/page.aspx?ID=87>

- Harris, C. R. (2008). Career development event participation and professional development needs of Kansas agriculture education teachers. *Journal of Agricultural Education* 49(2), 130-138. doi:10.5032/jae.2008.02130
- Instructional Materials Service. (2016). *Poultry science manual for National FFA career development events (7th ed.)*. College Station, TX: Instructional Materials Service.
- Isbell, E. A. (2013). A case study comparing participants vs non-participants of the Texas 4-H Livestock Ambassador program in relation to animal science knowledge, leadership, career development, and higher education knowledge gained (Master's Thesis). Retrieved from <http://oaktrust.library.tamu.edu/handle/1969.1/151737>
- JudgingCard. (2017). *Texas A&M state CDEs: Poultry*. Retrieved from <https://www.judgingcard.com/Results/Individual.aspx?ID=6954&EID=52930>
- Knowles, M. (1990). *The adult learner: A neglected species* (4th ed.). Houston, TX: Gulf Publishing Company.
- Lance, C. G. (1995). Broiler farm labor efficiency analysis of the 1950 to 1990 period in Georgia. *Poultry Science Journal*, 74(2), 398-401. doi:10.3382/ps.0740398
- Lazear, E. P. (2009). Firm-specific human capital: A skill-weights approach. *Journal Of Political Economy*, 117(5), 914-940. doi.org:10.3386/w9679
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage.
- Lundry, J., Ramsey, J. W., Edwards, M. C., & Robinson, J. S. (2015). Benefits of career development events as perceived by school-based, agricultural education

teachers. *Journal of Agricultural Education*, 56(1), 43-57.

doi:10.5032/jae.2015.01043

Meek, D., & Tarlau, R. (2016). Critical food systems education (CFSE): Educating for food sovereignty. *Agroecology and Sustainable Food Systems*, 40(3), 237-260.

doi:10.1080/21683565.2015.1130764

Merriam-Webster.com. (2017). *Collaborate*. Retrieved from: <https://www.merriam-webster.com/dictionary/collaborate>

O'Grady, E. (2016). Research as a respectful practice: An exploration of the practice of respect in qualitative research. *Qualitative Research in Education*, 5(3), 229-254.

doi:10.17583/qre.2016.2018

Ohio FFA. (2015). 2015-2016 Ohio FFA CDE handbook. *Poultry Management Career Development Event*. Retrieved from: <http://ohioffa.org/cde/rules-registration/>

Pantin-Jackwood, M. J., Stephens, C. B., Bertran, K., Swayne, D. E., & Spackman, E. (2017). The pathogenesis of H7N8 low and highly pathogenic avian influenza viruses from the United States 2016 outbreak in chickens, turkeys and mallards. *Plos ONE*, 12(5), 1-21. doi:10.1371/journal.pone.0177265


Phipps, L., Osborne, E., Dyer, J., & Ball, A. (2008). *Handbook on agricultural education in public schools* (6th ed.). Clifton Park, NY: Thomson Delmar Learning.

Pierson, L. (2016, December 5). Bridging the soft skills gap. *Orange County Business Journal*, B-46.

- Racicot, M., Venne, D., Durivage, A., & Vaillancourt, J. (2012). Evaluation of the relationship between personality traits, experience, education and biosecurity compliance on poultry farms in Québec, Canada. *Preventive Veterinary Medicine*, *103*, 201-207. doi:10.1016/j.prevetmed.2011.08.011
- Raffiee, J., & Russel, C. (2016). Micro-foundation of firm-specific human capital: When do employees perceive their skills to be firm-specific?. *Academy of Management Journal*, *59*(3), 766–790. doi:10.5465/amj.2014.0286
- Scanes, C. G. (2007). The global importance of poultry. *Poultry Science Journal*, *86*(6), 1057-1058. doi:10.1093/ps/86.6.1057
- Snetsinger, D. C. (1992). Poultry science training-what industry needs. *Poultry Science*, *71*(8), 1308-1312. doi:10.3382/ps.0711308
- Texas FFA Association. (n.d.). *Career development events*. Retrieved from <https://www.texasffa.org/cde>
- Texas FFA Association. (2017). *2017-21 poultry evaluation rules*. Retrieved from [https://www.texasffa.org/docs/POULTRY%20EVALUATION\\_16419.pdf](https://www.texasffa.org/docs/POULTRY%20EVALUATION_16419.pdf)
- Tulgan, B. (2015). Bridging the soft skills gap: How to teach the missing basics to today's young talent. *Employment Relations Today (Wiley)*, *42*(4), 25-33. doi:10.1002/ert.21536
- United States Department of Agriculture. (2016a). *Poultry and eggs*. Retrieved from <https://www.ers.usda.gov/topics/animal-products/poultry-eggs>

- United States Department of Agriculture. (2016b). *Report of the livestock and poultry: world markets and trade*. Retrieved from <https://www.fas.usda.gov/data/livestock-and-poultry-world-markets-and-trade>
- Vargas, N., Lloria, M. B., & Roig-Dobon, S. (2016). Main drivers of human capital, learning and performance. *Journal of Technology Transfer, 41*(5), 961-978. doi:10.1007/s10961-016-9483-6
- Vizzier Thaxton, Y., Cason, J. A., Cox, N. A., Morris, S. E., & Thaxton, J. P. (2003). The decline of academic poultry science in the United States of America. *World's Poultry Science Journal, 59*(3), 303–313. doi:10.1079/WPS20030018
- Yin, R. K. (2016). *Qualitative research from start to finish* (2nd ed.). New York, NY: The Guilford Press.

**APPENDIX A**  
**IRB APPROVAL**

<b>DIVISION OF RESEARCH</b>																																			
<b>Submission Approval</b> February 10, 2017																																			
<b>DATE:</b>																																			
<b>MEMORANDUM</b>																																			
<b>TO:</b>	Theresa PESL Murphrey ALRSRCH - Agrilife Research - Ag Leadership, Education & Communication																																		
<b>FROM:</b>	Human Research Protection Program Institutional Review Board																																		
<b>SUBJECT:</b>	Exempt Determination REF: 049474																																		
<hr/>																																			
<b>Study Number:</b>	IRB2017-0057M																																		
<b>Title:</b>	Determination of Curriculum Relevance to Industry: A Study of High School Career Development Event Poultry Skills and Knowledge Curriculum as it Relates to the Texas Poultry Industry																																		
<b>Determination Date:</b>	02/10/2017																																		
<b>Continuation Due:</b>	01/01/2018																																		
<b>Expiration Date:</b>	02/01/2018																																		
<p style="text-align: center;">Only IRB-stamped approved versions of study materials (e.g., consent forms, recruitment materials, and questionnaires) can be distributed to human participants. Please log into iRIS to download the stamped, approved version of all study materials. If you are unable to locate the stamped version in iRIS, please contact the iRIS Support Team at 979.845.4969 or the IRB liaison assigned to your area.</p>																																			
<b>Documents Reviewed:</b>																																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4" style="text-align: left;">Submission Components</th> </tr> <tr> <th colspan="4" style="text-align: left;">Study Document</th> </tr> <tr> <th style="width: 30%;">Title</th> <th style="width: 20%;">Version Number</th> <th style="width: 20%;">Version Date</th> <th style="width: 30%;">Outcome</th> </tr> </thead> <tbody> <tr> <td>interview_protocol02</td> <td>Version 1.1</td> <td>01/31/2017</td> <td>Approved</td> </tr> <tr> <td>Recruitment_script02</td> <td>Version 1.1</td> <td>01/31/2017</td> <td>Approved</td> </tr> <tr> <th colspan="4" style="text-align: left;">Study Consent Form</th> </tr> <tr> <th style="width: 30%;">Title</th> <th style="width: 20%;">Version Number</th> <th style="width: 20%;">Version Date</th> <th style="width: 30%;">Outcome</th> </tr> <tr> <td>Information Sheet</td> <td>Version 1.1</td> <td>01/31/2017</td> <td>Approved</td> </tr> </tbody> </table>				Submission Components				Study Document				Title	Version Number	Version Date	Outcome	interview_protocol02	Version 1.1	01/31/2017	Approved	Recruitment_script02	Version 1.1	01/31/2017	Approved	Study Consent Form				Title	Version Number	Version Date	Outcome	Information Sheet	Version 1.1	01/31/2017	Approved
Submission Components																																			
Study Document																																			
Title	Version Number	Version Date	Outcome																																
interview_protocol02	Version 1.1	01/31/2017	Approved																																
Recruitment_script02	Version 1.1	01/31/2017	Approved																																
Study Consent Form																																			
Title	Version Number	Version Date	Outcome																																
Information Sheet	Version 1.1	01/31/2017	Approved																																
<hr/>																																			
<b>Comments:</b>	<ul style="list-style-type: none"> <li>This IRB study application was determined to be minimal risk, Exempt Category 2 under 45 CFR 46, and the research may be active during the period indicated above.</li> <li>This study has been approved for 70 participants.</li> <li>Research is to be conducted according to the study application approved by the IRB prior to implementation.</li> <li>Any future correspondence should include the IRB study number and the study title.</li> </ul>																																		



## APPENDIX B

### EMAILS TO INDUSTRY AND ACADEMIC POTENTIAL PARTICIPANTS

Determination of Curriculum Relevance to Industry: A Study of High School Career  
Development Event Poultry Skills and Knowledge Curriculum as it Relates to  
the Texas Poultry Industry

#### Phone and/or Email Script

Hello/Dear Dr./Mr./Mrs. \_\_\_\_\_

My name is Kolton Page and I am a graduate student at Texas A&M University in the department of Agricultural Leadership, Education, and Communications. I am conducting a study about the knowledge and skills used and needed by employees in the poultry industry. I am interested in how these aspects relate to curriculum.

Would you be willing to be interviewed about this topic? If so, is there a time and place that would be most convenient? I would be happy to meet you in person or by phone. Your name and company's name will not be associated with the comments that you provide.

Thank you for your consideration,

Kolton Page  
Phone  
Email



IR2 NUMBER: IR22017-0007  
IR2 APPROVAL DATE: 02/10/2017  
IR2 EXPIRATION DATE: 02/10/2018

## APPENDIX C

### INTERVIEW PROTOCOL

#### Determination of Curriculum Relevance to Industry: A Study of High School Career Development Event Poultry Skills and Knowledge Curriculum as it Relates to the Texas Poultry Industry

##### Interview Protocol

*The protocol that follows includes open-ended questions and a number of areas to keep in mind. The purpose of these guiding questions is to enable individuals to be as informative as possible in their responses. The questions are neutral and encourage additional information, but do not suggest specific answers. Encouraging questions such as "Why?", "Why not?", "How is that?" or "In what ways?" will be used to support conversation. Follow-up questions will be employed to obtain further information and should touch on whatever the participant has already shared, thus these are only suggestions.*

##### Guide

###### Introduction:

Hello, my name is Kolton Page at Texas A&M University. This study is being conducted to determine what knowledge and skills are found and used in the poultry industry. Additionally, this study is seeking to distinguish which knowledge and skills are found in employees when first entering the industry in comparison with those knowledge and skills on which employees are trained. We are conducting interviews with individuals who have experience working in the poultry industry in manager/supervisor positions. Thank you for taking the time to visit with us today. You were selected because you are involved with <<Company name>>. This interview will take no more than 1 hour. As a reminder, all information shared will remain confidential. Your name will not be associated with any comments you make. Information shared will be reported in aggregate and your name will not be associated with the study.

###### Guiding Questions:

- What knowledge and skills are necessary for poultry employees to complete the many tasks asked of them?
- Given the identified knowledge and skills, which aspects are noted as being adequately present in poultry employees upon hiring?
- Given the identified knowledge and skills, which aspects are noted as being inadequately present or in need of development when hired?
- Are you familiar with the Poultry Evaluation Career Development Event? If no, would you like me to summarize this piece of curriculum?
- Of the knowledge and skills being taught through the poultry CDE curriculum, which are more/less important?
- Of the industry training needs which aspects are being addressed in the poultry CDE?
- Are there aspects which need to be addressed? Which ones?
- Is there anything else you would like to add?

###### Conclusion:

Thank you for sharing your thoughts, ideas, and experiences with us. Our goal is to document the knowledge and skills applied by employees to complete their work with your company. We appreciate your participation. Again, your name will not be associated with the comments you have provided.



IRB NUMBER: IR2017-0087  
IRB APPROVAL DATE: 02/10/2017  
IRB EXPIRATION DATE: 02/10/2018

## APPENDIX D

### PARTICIPANT CODING LIST

Academia/ Industry	Interview Order	Focus	Area of Company	Experience	Code
A	01	L	R	y	A01-LRy
A	02	P	R	y	A02-PRy
A	12	BD	R	y	A03-BDRy
A	16	N	R	y	A04-NRy
A	17	G	R		A05-GR
A	20	D	R	y	A06-DRy
A	21	BL	R	y	A07-BLRy
I	03	G	E		I01-GE
I	04	X	H		I02-XH
I	05	P	E		I03-PE
I	06	BP	Q		I04-BPQ
I	07	N	E		I05-NE
I	08	L	M	y	I06-LMy
I	09	X	H		I07-XH
I	10	P	Q		I08-PQ
I	11	P	H	y	I09-PHy
I	13	G	M		I10-GM
I	14	L	M	y	I11-LMy
I	15	N	M	y	I12-NMy
I	18	L	H	y	I13-LHy
I	19	B	H		I14-BH
I	22	BP	M	y	I15-BPMy
I	23	X	H		I16-XH
I	24	O	E	y	I17-OEy
I	25	X	H	y	I18-XHy
I	26	O	E	y	I19-OEy

## APPENDIX E

### POULTRY CDE EXPLANATION SHEET

The Poultry Evaluation Career Development Event is a contest put on by the FFA, a youth agriculture organization. Through this contest, high school students are tested on their knowledge of poultry and the poultry industry. The contest is separated into 11 different sections or classes:

#### **Skills**

1. Market broilers
  - a. Students place a class of 4 live broiler chickens in order from most meat to least.
  - b. Ability to pick out good birds vs bad. To find problems.
2. Egg-type hens
  - a. Students place a class of 4 live hens in order from most productive to least productive based on external characteristics of the birds.
  - b. Ability to pick out good birds vs bad. To find problems.
3. Grading poultry carcasses and/or parts
  - a. Students give 10 poultry carcasses USDA grades of A, B, C, or No Grade based on external factors.
  - b. Ability to notice when a carcass is not meeting standards. To find problems.
4. Placing Carcasses
  - a. Students place 4 carcasses in order of best to worst based on their USDA quality grade and amount of meat.
  - b. Ability to pick out good birds vs bad. To find problems.
5. Interior egg grading
  - a. Students give 10 shelled eggs a USDA grade of AA, A, B, or Loss based on internal factors that are observed through hand-candling the eggs.
  - b. Ability to pick out bad eggs. To find problems.
6. Exterior egg factors
  - a. Students observe and mark down the exterior defects of 10 shell eggs.
  - b. Ability to pick out bad eggs. To find problems.
7. Exterior egg grading
  - a. Students give each of the 10 eggs a USDA grade of AA/A, B, or Not Graggable based on their exterior factors.
  - b. Ability to pick out bad eggs. To find problems.
8. Boneless Further-processed poultry meat products
  - a. Students identify the defects of 10 samples of further-processed products.
  - b. Ability to pick out bad products. To find problems.
9. Bone-in Further-processed poultry meat products
  - a. Students identify the defects of 10 samples of further-processed products.
  - b. Ability to pick out bad products. To find problems.
10. Poultry part ID
  - a. Students identify the names of 10 poultry parts.
  - b. Understanding the anatomy of poultry.

#### **Knowledge**

11. Written examination
  - a. Students take a test to evaluate their knowledge of poultry and the poultry industry.