

A Longitudinal Investigation of Soft Skill Development of Agricultural Education Students

Introduction and Literature Review

Agricultural education has continually met the challenge of preparing students for “...successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems” (Ortiz, 2019). The experiential learning model has been vital to developing School-Based Agricultural Education students’ aptitude to critically think and solve real-world problems facing local, societal, and global agriculture issues. The industry is evolving to the extent that those entering the workforce must have a variety of relevant skills, both “soft” and “hard” or technical, to meet the growing industry challenges (Sarfranz & Rajendran, 2018).

The phrase “soft skills” has had trouble creating a sustainable, well-accepted definition (Weligamage, 2009; Rocco, 2001). Despite the phrase edging as an ambiguous slang term to describe the intangible employability skills of job seekers (Matteson, Anderson, Boyden, 2016), common interpretations of “soft skills” have been established amongst the available literature. As per Weligamage (2009), the United States utilizes “basic skills, necessary skills, workplace know-how” as shared vernacular to describe generic skills needed of graduates. Similarly, terms such as “core skills,” “key competencies,” or “trans-disciplinary goals” are used in the United Kingdom, Australia, and Switzerland, respectively (Weligamage, 2009). Soft skills is an all-encompassing term in other studies where teamwork, professionalism, emotional intelligence, innovation, and communication fall under the umbrella of people skills (Rocco, 2001; Matteson, Anderson & Boyden, 2016). To understand the grounds this study is built on, soft skills will be defined as “intra- and inter-personal (socio-emotional) skills, essential for personal development, social participation and workplace success” (Kechagias, 2011. p 33).

Soft skills, and all of its characterizations, are at an all-time high need (Crawford & Dalton, 2012). No matter the workplace, employers are searching for prospective career candidates that have the requisite skills to produce high-quality outcomes in the midst of ever-changing workplace demands (Sarfranz & Rajendran, 2018). Today is no exception, as the outbreak of the COVID-19 has forced tremendous change and therefore, has required a broader spectrum of skills including soft, social-emotional skills (Naamati et al, 2020). However, the competencies of post-graduate students have left employers disappointed and expecting more (Erickson et al., 2018). Though unemployment has been marketed as the lack of jobs available, Rahmat et al. (2016) took on a different perspective where unemployment is due to the incongruity of the employer’s needs and the graduate’s possession of skills (Hasan et al. 2016). Agriculture is no stranger to this as observed by Erickson et al. (2018). Retailers in precision agriculture have experienced a large prevalence of candidates with low to deficient proficiency in areas of need with verbal and written communication demanded the most. By and large, the agricultural and natural resources industry is looking for students who are dependable, take initiative, and can solve the emerging problems facing the agriculture community (Easterly et al., 2017).

Using experiential learning as a vehicle, agriculture education is addressing the need of soft skills development in students. Soft skill development and its relationship with experiential learning has been studied in the past. As stated by Rayfield, Murphy, Briers, & Lewis (2012. p.

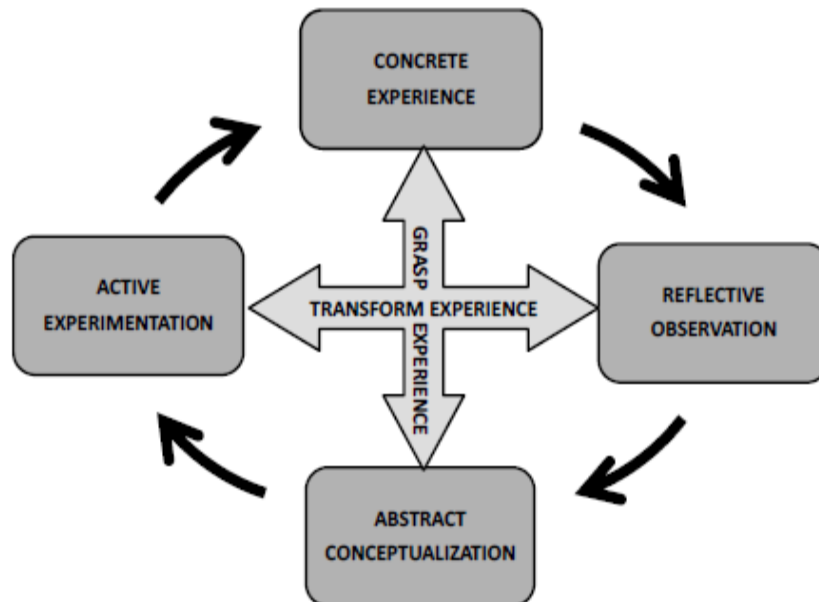
48), “Agricultural education has always relied heavily on hands-on experiential learning as a method of instruction.” Though this may be true, direct instruction continues to be a typical method of teaching in which instructors use scripted, scaffolded techniques to cultivate student learning (Baker & Robinson, 2016). The referenced researchers compared both experiential and direct instruction. It was found that students who underwent experiential learning had higher creativity, practicality, and similar analytical scores than those who experienced direct instruction. In further promoting experiential learning, Esters & Retallick (2013) observed students growing their confidence in career choices including “...goal setting, planning, and problem solving” (p. 76).

Theoretical Framework

The theoretical framework utilized for this research project was Kolb’s Experiential Learning Model (Figure 1), which includes four stages, 1) concrete experiences, 2) reflection and observations, 3) abstract conceptualizations, and 4) active experimentation (Kolb, 1984). Robert’s (2006) manuscript sought to summarize what is known about experiential learning theory; experiential learning begins with an initial focus of the learner, followed by an experience, then the learner reflects on their observation, formulates a generalization, and then tests the generalization with experimentation. Once completed, the circle starts over in a spiral-like pattern (Roberts, 2006).

Figure 1

Kolb’s Experiential Learning Model (Kolb, 1984)



Purpose

The purpose of this longitudinal research study was two-fold, 1) to determine the changes of soft skills development in high school students enrolled in School-Based Agriculture Education over a four-year period (2016-2020) and 2) to analyze the differences in soft skill development between students who were at varying grade levels 9th – 12th. This study addresses Research Priority Three: Sufficient Scientific and Professional Workforce That Addresses the Challenges of the 21st Century (Roberts et al., 2016). In addition, the National Research Council also identified soft skills as a necessary attribute in modern workplace settings (2009).

Methods

The researchers employed a descriptive, longitudinal study to investigate how agriculture education students' soft skills changed over a four-year period. Utilizing the Life Effectiveness Questionnaire Version H, students responded to a 24-item survey asking to rank the following soft skills on a scale of one ("not like me") to eight ("like me"). The scale consists of eight subconstructs with three items in each of these areas: time management, social competence, achievement motivation, intellectual flexibility, task leadership, emotional control, active initiative, and self-confidence (Neill, Marsh and Richards, 1997). The LEQ-H was developed in 1997 and was originally used to measure changes associated with experiential learning programs (McLeod & Craig, 2004). The reliability of the LEQ-H was established by the researchers utilizing the Tucker-Lewis index (TLI) and relative noncentrality index (RNI), resulting in coefficients of .945 and .959, respectively (Neill, Marsh and Richards, 1997).

In 2016, as part of a previous study, agriculture teachers were asked to administer the LEQ-H to 9th-12th grade students from five high schools ($n = 164$). In the fall of 2020, the researchers began attempting to reach the initial population. Without warning, the researchers faced a major setback as students were sent home from school due to the COVID-19 pandemic. Naamati explains that this situation forced teachers to adapt quickly to digital teaching methods and the use of various platforms for distance learning, creating very challenging times (2020). After failed attempts to reach students through their teachers, the LEQ-H was administered via e-mail using Qualtrics. Of the 164 agricultural education students who participated in the 2016 survey, eight (5%) students completed the 2020 survey. Data was analyzed using individual scores and group level data to determine the change in soft skills development over the four-year period

Findings

Individual results identified an overall mean score increase of soft skills of 5.83 from 2016 to 2020, a positive 3.8% increase in soft skills. Achievement Motivation had the largest increase (12.67%) with Social Competence and Active Initiative close behind growing 11.19% and 9.02%, respectively. Emotional Control, on the other hand, had the greatest decrease in soft skill development within the four years (-13.04%). Table 1 outlines complete details of soft skills changes between both surveys.

Table 1

Percent Change of Soft Skills Over Four Years

Soft Skill	2016 Mean	2020 Mean	Mean Difference	% Change
Time Management	4.92	4.96	0.04	0.85
Social Competence	5.58	6.21	0.63	11.19
Achievement Motivation	6.25	7.04	0.79	12.67
Intellectual Flexibility	5.63	5.83	0.21	3.70
Task Leadership	6.13	6.04	-0.08	-1.36
Emotional Control	5.27	4.58	-0.69	-13.04
Active Initiative	5.54	6.04	0.50	9.02
Self-Confidence	5.65	5.96	0.31	5.54
Overall	5.62	5.83	0.21	3.80

In analyzing group level data, the 10th grader ($n = 1$) experienced the greatest changes across a majority of soft skills with an overall percent change of 16.94%. Emotional Intelligence had the largest negative changes; more specifically the 10th grader having the greatest at 28.57% decrease. The 9th graders ($n = 4$) experienced the second highest improvement at 13.88% and followed closely behind amongst most other soft skills [Social Competence (11.19%), Achievement Motivation (12.67%)]. The 11th grader ($n = 1$) and 12th graders ($n = 2$) experienced decreased soft skill development over the past four years, juniors (-4.46%), and seniors (-10.98%). Junior and senior level students graduated from high school in 2016-2017, therefore spending less time in secondary agricultural programs during the term of this study. Table 2 shows all details across grade levels.

Table 2

Percent Change of Soft Skills by Grade

Soft Skill	9th Graders	10th Graders	11th Graders	12th Graders
Time Management	14.00	20.00	-10.00	-15.79
Social Competence	25.45	40.00	-10.00	-6.82
Achievement Motivation	16.18	41.18	4.35	0.00
Intellectual Flexibility	34.62	-17.65	-19.05	-13.33
Task Leadership	-4.62	22.22	9.52	-11.63
Emotional Control	-6.09	-28.57	-7.14	-19.51
Active Initiative	25.93	26.32	0.00	-16.67
Self-Confidence	10.92	28.57	-5.00	-4.76
Overall	13.88	16.94	-4.46	-10.98

Conclusions and Discussions

Conclusions can be drawn from the findings of this study about the improvement of soft skill development from 2016-2020 for students enrolled in an agriculture education program. Self-perceived soft skills improved 3.80% over the four years the eight participants were in the agricultural education program. The greatest improvement was in Achievement Motivation increasing 12.67%. Emotional Control drastically decreased 13.04 percentage points.

As shown in Table 2, the percent change per grade level included freshman (13.88), sophomores (16.94), juniors (-4.46), and seniors (-10.98). Sophomores experienced the greatest improvement in soft skill development with a mean score increase of 16.94%. Both lowerclassmen groups had positive increases in soft skills possibly due to spending more time in agriculture education during the study period. In contrast, senior level students had the largest decrease in overall soft skill development (-10.98%). These senior level students would now be years into young adulthood, the workforce, or nearing the end of their undergraduate college careers in 2020. Freshman and sophomores spent more time in controlled School-Based Agriculture Education, a structured and well-developed personal growth program. Juniors and seniors have experienced more variability in daily life post-high school. Although the sample size is small due to the COVID-19 pandemic, the results indicate that these students who were actively involved in agriculture education programs did improve their soft skills development over time.

Implications and Recommendations

Secondary Agricultural Education programs could benefit from highlighting the need for ‘soft’ skills, as well as ‘hard’ or technical skills. Students could improve their soft skills development through continued enrollment in agricultural education courses. Continued involvement in agriculture education activities and periodic soft skill assessments to track students’ soft skill development could better prepare students to meet the challenges of the 21st Century.

Agricultural teachers are encouraged to include the following items in their Agricultural Department Program Plan: soft skills curriculum, annual evaluation of students’ soft skills development, and ongoing experiential learning activities to better prepare students to enter careers in the agricultural industry. Additional longitudinal research is needed to determine the long-term effects on soft skills development for agricultural education students. Finally, the development of a Soft Skills Certificate Program to assist students in documenting their experiential learning activities as proof to employers of their career readiness skills is highly recommended.

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