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Potpourri Issue: Collection of Informative Articles

by Gaea Hock

Welcome to a new year and a new editor of *The Agricultural Education Magazine*! It is my sincere honor to take over as editor of this publication. I hope to continue the legacy of many other giants in the agricultural education profession who have served in this role.

I want to start with a quick introduction of myself. I am a Kansas native, K-State graduate (twice over), Texas Tech Ph.D. holder, former high school agriculture teacher and current agricultural education professor at Kansas State University. I have been a reader of this magazine since before I entered the high school classroom in 2003. I currently use several articles in my teacher education courses and have an assignment where the students are asked to locate and summarize an article they find interesting. These are just a couple of the reasons why I wanted to serve as editor – to continue the tradition of providing high-quality, timely, and educational articles to agricultural educators across the globe.

I look forward to serving as the editor as we work to make the magazine more accessible to a larger audience while keeping the content relevant and useful to current agricultural educators. I welcome your feedback and suggestions to improve the articles and issues during my time as editor. I also want to thank my student workers who will assist in the layout and editing work needed to pull each issue together. Just like a good agriculture teacher, I am using this

New Year, New Editor

as a learning opportunity for students to enhance their own skills.

Looking Ahead at the Year to Come

I am excited to read each of the issues this upcoming year. The theme editors have exciting topics that include a wide variety of agricultural education topics. Dr. Smith, University of Idaho, will pull together articles to help us implement inquiry-based instruction at a deeper and more meaningful level. Dr. Easterly, New Mexico State University, will help us reflect on how we have grown as a profession since the publication of a small green book, *Understanding Agriculture – New Directions for Education*, 30 years ago. We will learn about science communication from Dr. Taylor Ruth, University of Illinois at Urbana-Champaign. Dr. Laura Greenhaw, Mississippi State University, will help us reflect on how we are teaching and reinforcing leadership concepts in our classrooms and programs. Mike Womochil, Colorado Agricultural Program Director, will compile the final issue of 2019 focusing on successful implementation of SAE for All. If you have article ideas for any of the upcoming themes, please reach out to me or the theme editor.

My First Issue as Editor

This issue includes articles spanning a wide variety of relevant topics submitted by agricultural educators from across the country. As I read the articles, I reflected on the countless jobs an agricultural educator has to balance. You have to be a classroom educator, field experience coordinator,

coach, mentor, and leader in your school, community, and beyond. This issue includes a wide range of articles that will appeal to the many roles an agricultural educator is asked to perform. There are articles related to how students can learn from their experiences with animals, including bees, horses, pigs, and show animals. Helping students learn from experts in the field and working to make the agricultural education program's community viable are also included. There are articles with information on how to enhance the learning experiences with hands-on activities and boost creativity and critical thinking skills. In addition, there are articles about the importance of promoting the agricultural education career to your students and a story about transitioning an agricultural education program to the next teacher. The diversity of topics included in this issue reflect the many different duties and roles we are asked to accomplish as agricultural educators. I hope you enjoy reading this collection of informative articles!



*Dr. Gaea Hock is an Associate Professor of Agricultural Education at Kansas State University and Editor of **The Agricultural Education Magazine**.*

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Article Submission

Articles and photographs should be submitted to the Editor or Theme Editor. Items to be considered for publication should be submitted at least 90 days prior to the publication date of the intended issue. All submissions will be acknowledged by the Theme Editor and/or the Editor. No items are returned unless accompanied by a written request. Articles should be approximately four double spaced pages in length (1500 words). Information about the author(s) should be included at the end of the article. Photos and/or drawings appropriate for the "theme issue" are welcomed. Photos/drawings should be submitted in an electronic format (jpg or tiff format preferred - minimum 300 dpi). Do not imbed photos/drawings in the Word document. A recent photograph (jpg or tiff format preferred- minimum 300 dpi) of all authors should accompany the article unless photographs are on file with the Editor. Articles in the *Magazine* may be reproduced without permission but should be acknowledged.

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Breaking Barriers in Agricultural Education

by Eric Rubenstein

As I think about the impactful role agricultural education has played in my life, I find that I am always interested in helping others see the benefit of our programs. One of the common concerns I hear from teachers is the fact that students think of agricultural education as “cows, plows, and sows” or traditional production agriculture. The students use phrases like “I don’t want to be a farmer” or “I am not going to get my shoes dirty.” As with most agriculture teachers, these comments hit us at our core and sometimes make us feel as though we will never break through to most students in our schools. However, I believe that there are three steps to helping us overcome the stereotypes.

First, break down the barriers between student’s perceptions and reality. Some of the most successful agricultural education programs have moved away from only publicizing their programs in traditional ways (i.e. tractor pulls, drive your tractor to school days, or even petting zoos). While these events are important to include in our yearly activities, try including activities that open people’s perceptions of what agriculture really is all about. For example, host a rabies clinic for small animals, operate a dog day spa, or showcase student projects created in your courses. If we can begin to break down the silos, we will notice more students find their way into our agriculture programs.

Second, open your programs to students of all races, religions, genders, and sexual orientation. One of the fundamental roles that a teacher plays in the school is to create a welcoming classroom environment. For minority students, these classrooms can be a place where they are exposed to prejudicial comments from other students and, in some cases, teachers. Be a place where all students feel welcomed and wanted. As agriculture teachers we have the opportunity to develop lasting relationships with students. I have found the most impactful relationships that I have developed are with students that never found a home or place where they felt accepted, anywhere else in the school.

Third, be present in the school and community at all events, not just the agricultural events. I will be the first one to admit that we have created a profession where we are always busy with something that promotes and supports our students and programs. However, if you can find time to be present and attend school sporting events or even chaperone school dances or activities, this can demonstrate to your current students and others that you are willing to invest in their interests. In some students’ lives, you will have invested more in them than their own parents have or ever will. These small actions also help new students or those who have questioned taking an agriculture course realize that you are a real person and will help them begin to open their minds to taking an agriculture course.

I hope that we can continue to promote our valuable industry to all students and that we can play a role in preparing an agriculturally literate society. These small steps can help to begin this process! Thank you for all that you do and continue to do to promote agriculture in our local schools across the United States!!



Eric D. Rubenstein is an Assistant Professor at the University of Georgia in the Department of Agricultural Leadership, Education and Communication.

Using Horses as Teaching Tools: An Equine Guided Education Clinic

by Shannon Arnold and Amy Prechter

Equine assisted activities are gaining popularity as a modern, alternative form of human therapy, teaching and learning, and personal development. Research has shown that equine assisted learning can improve academic performance, life and social skills, and strengthen teams and relationships (Aduddell, 2003; Cole, 2005; EAGALA, 2014; Hutchinson, 2009; Klontz, et al., 2007; Luckner & Nadler, 1997; Shultz, 2005). With regard to innovative approaches in experiential learning, using horses as teaching tools has gained popularity in non-formal and academic educational settings in recent years. Horses have been used to promote life skill development not only in 4-H, but also in equine-assisted therapies for mentally and physically disabled individuals and educational programming (Evans, Jogan, Jack, Scott, & Cavinder, 2009; Gibbs, Potter, & Vogelsang, 2003; Saunders-Ferguson, Barnett, Culen, & TenBroeck, 2008; Smith, Swinker, Comerford, Radhakrishna, & Hoover, 2006).

Those who work with horses not only gain the benefits of learning horsemanship and care of a large animal, but also develop important life skills that can be used in their day-to-day lives. As Antilley et al. (2010) reported, "Those participating in horse-related activities can experience beneficial improvement in self-motivation, responsibility, confidence, and self-esteem" (p. 7) that transcends to all life situations. Equine Assisted Growth and Learning Association (EAGALA, 2014) offers a standard model

and structure for using horses as a framework for creative and adaptive teaching and learning. This model includes instruction using a team-based approach focused on experiential and solutions-based learning that is applicable to many environments and audiences.

How It Works

An agricultural education professor partnered with a local equine instructor to develop a half-day on-the-ground equine guided education (EGE) clinic for youth. With our combined backgrounds and foundational knowledge learned from the EAGALA model, non-formal and outreach education, equine therapy research, psychology, and positive youth development, we developed our own learning sessions. The clinic used a co-facilitation team approach to teach life skill development and personal growth as an intricate component of the horsemanship program.

Youth gained first-hand experiences with innovative teaching and learning using horses as a venue for building leadership, teamwork, communication, and goal setting skills. Clinic design encouraged youth to explore the emerging world of equine assisted activities and their application to personal situations. The fundamentals, model, and structure of EAGALA and non-formal education were used to guide curriculum development. The equine instructor provided the facility, horses, professional horsemanship and psychology knowledge, while the agricultural education professor provided guidance in overall

program development, positive youth development, non-formal education, and experiential teaching and learning strategies. The overall goal of the clinics was to increase participants' knowledge, awareness and understanding of EGE in the areas of personal growth and development.

What We Learned

Based on observations and feedback, the team found it most effective to teach about responsibility, relationships, communication, leadership, and teamwork through horse safety and care; haltering, tying and leading a horse; horse behavior observation; horse anatomy; and on-the-ground horsemanship activities. The team has further developed modified clinics for a variety of community groups based on their specific goals. All workshops focus on the utilization of horses for creating teambuilding, communication, and leadership skills.

The inclusion of a qualified, knowledgeable team of educators was essential to the success of the clinic. At this time, we are working with collegiate student organizations, 4-H clubs, girl scouts, FFA chapters, and health care professionals on similar clinics. A conversation has been started to develop an



interdisciplinary course between agricultural education, nursing, and equine science. Finally, a grant was awarded from AQHA for further clinic development.

In addition to knowledgeable instructors, suitable, safe horses and facilities are necessary to deliver these clinics. Equine guided education books, training programs, and continuing education workshops offer valuable content and ideas. Fees may include facility fee, horse use, arena props, and horse equipment, educational supplies, and journals.

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Expanding the Classroom Experience through Pre-Service Seminars

by Andrew Baker, Colton Downs, Brent Nelson, Alison Riesing and Mariana Roberts

Today's pre-service teacher shave limited contact hours for professional enhancement and development of content knowledge. For these reasons, specific seminar topics are decided by pre-service teachers and teacher educator faculty to select practitioners within their network, to present on these topics. These two hour seminars are filled with engaging, hands-on activities that pre-service teachers can use to enhance their teaching. These seminars fill the gaps in the curriculum.

We are very fortunate in the State of Illinois to possess an Agricultural Education line item that resides on the Illinois State Board of Education (ISBE) budget. In 1984, the Illinois Leadership Council for Agricultural Education (ILCAE) was formed with the primary purpose to lobby for new legislation to establish an Agricultural Education line item. Next, the Illinois Committee for Agricultural Education (ICAE) was formed to approve the line item budget. The Facilitating Coordination in Agricultural Education (FCAE) group was established to provide support for every Illinois agriculture teacher. All of these groups have put in countless hours to maintain and increase funding over the last four decades.

One of the current initiatives of the line item was the establishment of the Growing Agricultural Science Teachers (GAST) grant program. The primary objectives of the grant are to develop retention activities and implement recruitment events. Ever since Western Illinois University has

had the opportunity to apply for this grant, we have utilized a portion of the funds to offer seminars (Brown Bags) for our pre-service teachers to attend, which has improved our retention rates. The Brown Bags have had a wide variety of topics that range from how to best utilize an alumni group to understanding a union contract. The seminar topics are educational and relevant to the current issues facing pre-service teachers today. The pre-service teachers are truly appreciative of having the opportunity to discuss and explore areas of the profession not included in the core curriculum.

The Teacher Education core curriculum only possesses a fixed amount of contact hours within the degree program. Many of these contact hours focus on agriculture content knowledge and other educational foundation courses. However, where does the curriculum allow the students to explore other complex variables of being a secondary agriculture teacher? These seminars allow the students to explore, ask, and network with professionals that work with these topics every day. These practitioners range from agriculture teachers, principals, technology directors, to university faculty. All of whom are willing and ready to educate our pre-service teachers. If the analogy is true that it takes a village to raise a child, then it takes a network of professionals to create a quality first-year teacher.

When the opportunity surfaced to submit an article for this edition, I decided to ask my seniors, if they were ready for their first publication. They all

anxiously agreed to put together an abstract, not knowing the work ahead of them. However, I knew they would come through as they always have. Four of my seniors have provided a brief synopsis of the educational value they received from a specific seminar they attended. Here are their stories:

Many Agricultural Education majors have little knowledge or experience with livestock judging. The livestock judging CDE is one of the most popular FFA competitions and many pre-service teachers are not properly equipped to prepare their students to be successful at this competition. Dr. Mark Hoge started the seminar by teaching us how to correctly mark the scorecards. We ended this lesson, by going through livestock classes that were recently used during a livestock judging competition. This was a great opportunity to not only get hands-on experience judging livestock, but also being able to hear a breakdown of why the selections were made and what to look for from WIU's livestock judging team. This allowed us to receive additional tips they have learned over the years and get some insight on what we should be telling our future students. We also had the chance to listen to a few of the members give a set of oral reasons. Without opportunities like this, many teachers will not be as prepared to take on the multifaceted role of an agriculture educator. – **Brent Nelson; Franklin, IL**

Technology has changed drastically during my lifetime. My peers and I anticipate that this trend will continue throughout

our teaching careers. With this in mind, we asked Mrs. Katie Hoge to present on different technologies utilized in the classroom. The presentation provided us with several samples of applications and software that would be beneficial to our own classrooms, such as Remind101, Edmodo, Office 365, PlayPosit, and numerous other technological tools. Dr. Baker then issued a challenge to us. The challenge was to incorporate a new piece of technology into our next lesson. This seemed difficult at first, but I gave it a shot. I decided to implement PlayPosit into my next lesson on Economics. PlayPosit is a website that allows teachers to create and share interactive video lessons. It resulted in rave reviews from my peers. This experience opened my eyes to effective ways technology could be utilized, however, this experience would not have happened if not for WIU's Brown Bags.

– **Colton Downs; Canton, IL**

Since many Agricultural Education majors are unfamiliar with the AET system, we decided to call on Mr. Bryan Schullian to conduct two workshops. These workshops included demonstrat-

ing the record keeping process using the "Student Finances" tab. This tab includes cash revenues and expenses related to the SAE as well as the tab about non-current items. Along with the record keeping portion of AET, the "My Journal" tab was also covered. This is where the students provide all of their FFA information. The journal portion of the AET also allows for students to log all of the competitive FFA events that they competed in, plus their placings. AET is directly connected to the National FFA and the Illinois FFA Association for easier completion of applications. Mr. Schullian showed us how to use the program to sign up for different things, such as State and American Degrees. AET will be the only on-line record book keeping system available to Illinois agriculture students in the near future. This seminar has equipped us with the ability to maneuver through the system with ease and gain the confidence to assist our students with AET.

– **Mariana Roberts; Payson, IL**

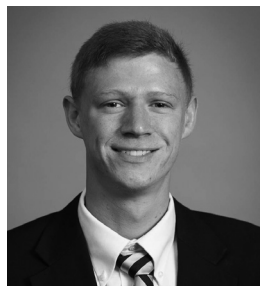
We have heard about the CASE curriculum in our classes before, but we never had any formal instruction. We invited Mr.

Riley Hintzsche, who is CASE Certified, to give us a demonstration of a CASE lesson. He not only taught us about CASE, he also gave us excellent advice on how to better manage our classroom and student assignments. He told us how his students keep a non-spiral notebook that contains tools for a more manageable classroom. The notebook contains a quick partner selection tool, table of contents, diagrams, notes, folder, and bathroom passes. This means that if a student has their notebook, they are ready for class. Mr. Hintzsche also brought to our attention how important delegation is. Not only does that help lighten our load, but this also helps the students to feel good about themselves. The CASE curriculum is structured to utilize inquiry-based teaching. However, a drawback to CASE is the cost of the training and startup, but Mr. Hintzsche showed us several websites to find the grants that could be used to offset the cost of the training. The only thing that could have improved this seminar was to add another hour. I think that CASE is a great investment for a teacher, especially for beginning teachers.

– **Alison Riesing; Galesburg, IL**



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Finding Sweet Success in Beekeeping Education Projects

by Sarah Cramer

Introduction

When I was in graduate school, a colleague of mine showed me an old photograph found deep within the University of Missouri archives, taken shortly after the turn of the twentieth century. The scene showed a group of college students (all men, of course) standing in a laboratory on campus, wearing full wool suits, and examining frames from a beehive; dripping with honey and crawling with honeybees. I was stunned by the image, in part because the students were calmly holding the frames indoors and without gloves or veils, but mostly because, to the best of my knowledge, apiculture, or the practice and study of keeping bees, had not been a formal course offering at Mizzou in decades.

I do not know precisely when the university stopped offering a course on beekeeping, but I do know in the intervening years honeybees have gained unprecedented attention and been the beneficiaries of great public concern. In this article, I share information about a student-led, non-formal educational initiative on Mizzou's campus that has helped fill the formal apicultural education void. I also draw upon my experiences initiating beekeeping education programs with younger students to provide suggestions for formal and non-formal educators of all age groups interested in bringing beekeeping education to their school or program.

Sustain Mizzou Beekeeping

Sustain Mizzou Beekeeping is the brainchild of University of Missouri graduate, Megan

Tyminski, who, as a sophomore pitched the idea of bringing beehives to Mizzou to Pete Millier, Director of the Mizzou Botanic Garden and overseer of campus Landscape Services. As an experienced beekeeper, I was recruited shortly after to supervise the project and mentor the new beekeepers. It was serendipitous that the founding of this project coincided with my first year as an agricultural education PhD student.

Before any hives were established, there was a fair amount of university red tape to navigate. Risk management plans had to be drafted, additional university permission granted, funds secured, and a location selected. It was determined that the hives would be placed on the east side of campus, in a courtyard known as the Butterfly Garden, so named because it is landscaped in native, nectar producing plants favored by butterflies and other pollinators. Plans were made for fencing around the hives, and landscapers were briefed on how to tend to the plants in the immediate vicinity without disturbing the bees. The winter before the bees were set to arrive, I taught an introductory beekeeping class for students interested in getting involved with the project, during which we also assembled and painted the hives themselves.

On the day the bees arrived, a group of students and I suited up and prepared to install them into the awaiting hives. It was a remarkably uneventful occasion, given that by the time we were done with both hives we had effectively added 20,000 new head of livestock

(individual bees) to our campus! Since the bees were installed in the spring of 2016, we followed a generally consistent rhythm as a group. Roughly every two weeks, depending upon the season and weather, we met for a hive inspection. Initially I led inspections, going through the process of checking each frame, looking for healthy brood, stored honey, signs of disease, and the queen. I would pass frames around for students to get a closer look, and point out notable features in the hive. As new, younger beekeepers increased their knowledge and confidence, and as Megan and I prepared to graduate in the spring of 2018, I delegated more tasks and cultivated new leadership to take over.

The Buzz Spreads through Columbia, MO

After our initial success the first year of the project, Mizzou Botanic Garden asked me to speak about honeybees to the science teachers from Columbia Public Schools, our local district. This was a watershed moment, as the science coordinator for the entire district was in attendance, and he left very excited about bees. I informed him of a grant for an educational beehive (mentioned below), and by the end of the school year we had established a beehive at one elementary school in the



district. The school has rallied around their beehive; even begging district administrators to let them change their mascot to the honeybees. The enthusiasm for this first hive has spread throughout the district, and this coming spring five more schools will be receiving district-funded hives.

Suggestions for Educators

- *Develop support.* Discuss your interest in starting a beekeeping program with your colleagues, and ask if any would be interested in helping. If you happen to work with someone who keeps bees already, be sure to include them! Speak with administrators early to get a sense of their willingness to support the project (be warned: they will likely say no first, citing safety concerns, so come prepared with a risk management plan and examples from other schools). Connect with school groundskeepers, too, as these are individuals you also want in your corner.
- *Do your research.* Read books about beekeeping. *The Backyard Beekeeper* by Kim Flottum is a great resource for small-scale beekeepers, but most libraries have a beekeeping section nowadays. Attend meetings of local beekeeping groups to learn from them and build a network of mentors. Seek out age-appropriate curriculum and educational resources to incorporate bees into your teaching:
 - Citizen Science projects are a great option if you

do not want to commit to a hive. Examples include ZomBee Watch (www.zombeewatch.org), The Great Sunflower Project (www.greatsunflower.org), or BeeSpotter (www.beespotter.org)

- Population ecology-type lessons using honeybees, and lessons about Colony Collapse Disorder (CCD) meet many Next Generation Science Standards across a range of grade levels. There are lesson suggestions and sample classroom tasks related to bees available directly from NGSS.
- Extensive honeybee curricula are available through the Agriculture in the Classroom program (an example from Utah: https://utah.agclassroom.org/estore_files/honey_files.pdf) and 4-H (an example from Purdue: <https://www.extension.purdue.edu/extmedia/4h/4h-571-w.pdf>)
- *Find funds.* Beekeeping startup costs can be pricey, so it is important to establish a plan for funding a new beekeeping project. There are a variety of small grants available to beekeepers, and The Honeybee Conservancy funds educational hives for schools, specifically (<http://the-honeybeeconservancy.org/beekeeping-grants/>).
- *Make a plan for school*

breaks. Honeybees are the busiest during the summer, when schools are the emptiest! Make a plan for checking up on the hive over the break.

Conclusion

The national buzz around bees has never been greater, and neither has the need for skilled beekeepers. Educational beekeeping programs, in higher, secondary, or even primary education, present myriad benefits to their participants. First, beekeeping is a valuable, potentially profitable skill, and there is no substitute for hands-on learning in an actual beehive. Second, a beehive is a perfect microcosm of the larger ecosystem, and honeybees lend themselves to endless lessons on ecology, agriculture, symbiotic relationships, genetics, horticulture, and so much more. Finally, the footprint of a beehive is less than four square feet, yet it can house upwards of 60,000 animals. I would bet that if you looked in the abandoned corners of your schoolyard, or even on the building's roof, you could find a bit of room for a teaching hive. I hope you and your students will suit up and take a chance on beekeeping; I can assure you the rewards are sweet!



Sarah Cramer, Ph.D., is a Beekeeper & the Brown Visiting Teacher-Scholar Fellow in Sustainable Food Systems at Stetson University.

The Agricultural Education Magazine

Developing Classroom Production Animal Ag Projects: Think OINK

by Riley Hintzsche

OINK.....

To many, this phrase is a simple noise that we hear very often in our careers. Whether it is at our local fairs, school barns, or even at home in our show barns, OINK is a part of many agricultural educators careers. However, for the students at Streator Township High School, OINK is an acronym for Observe, Innovate, Network, and Kinesthetic-Learning.

In the fall of 2016, Streator Township High School Agricultural Education Department, Streator, Illinois and Brockman Farms, Verona, Illinois launched the Think OINK Project. The Think OINK Project focuses on the practices of production animal agriculture through a hands on, classroom initiative.

Although students know that animals are butchered for human consumption, few students know what it takes to raise a wholesome, marketable product that we consume. The goals for the Think OINK Project are for students, both rural and urban, to be able to identify the many steps, processes, and ideals it takes to create that product in production agriculture. Students artificially inseminate a sow, monitor the growth and development of her piglets while in the womb, assist in delivery of the piglets within our school classroom, and take on all management procedures for post natal care.

Additionally, students learn about agricultural literacy and communication as students maintain a Facebook page, communicate with the public, and operate a live video cast that al-

lows people locally and nationally to engage in the entire process. These goals allow students to gain a hands on approach to their learning and identify the importance of animal agriculture.

Timing: It's Everything

The project's timeline can seem relatively long but the anticipation is mighty for many students because they have developed full ownership in the project. The project starts late August when I spend time communicating with Brockman Farms about potential days that the students Think OINK sow can be bred. When a date is secured based off the sows heat cycle, students travel to Brockman Farms on a field trip during late August early September where they learn about the basis of sow management, sperm fertility and morphology, piglet care, as well as artificially inseminate their sow that will farrow in Streator Township High School's greenhouse the following spring. Why is this important? This entire process begins the students excitement and they begin to understand that they were in charge of the production process that took place.

After 30 days of being bred, and a confirmation from Brockman Farms, the students begin to work on the engagement piece among their class. They cohesively choose a name for the Think OINK Sow. In 2017, the sow was named Betty White. In 2018, the sows name was Charlotte. This year, we will be welcoming Alberta Einswine to Streator Township High School. Students also provide weekly updates of the

sow and her gestation through Facebook posts and Facebook live videos a month prior to her arrival! These updates are done on the Friday of every week within the last part of her gestation period.

Although the sow is not at our immediate disposal, the students take on the role of researching potential problems that may occur during pregnancy and work through hypothetical situations that may occur while raising pigs. The students also examine the reproductive system of a pig and learn about piglet formation and health through a fetal pig dissection.

The Moment We All Wait For

Ten days prior to her due date in late January, the Think OINK sow joins the students at Streator Township High School where she arrives at her newly renovated nursery, the school greenhouse. The students assist in loading her into the gestation stall, set up the livestream camera, and make proper accommodations to ensure she is healthy and comfortable based off what they have learned in classes. Additionally, students learn the many management practices livestock producers engage in to keep both animals and humans safe such as vaccinations and gestation stalls. The students then start the important role of monitoring her behavior, creating facebook live videos to inform facebook followers and develop pre-made piglet announcements to inform the public that the piglets have been born.

During this time, students begin to see a large influx of followers on our Facebook page. Many

of the followers are excited to see the birth of the piglets and engage in the page. However, there is also much controversy among followers during this time as many are not fully educated on modern production procedures. Students take on the roll of responding to followers based on what they have learned in class and provide personal insight as to why what they have learned is at the best interest of the sow, her piglets, and the students at Streator Township High School. The most important concept is the students learn to respond with purpose and reason not to just respond to solve the problem!

When the sows behavior and attitude changes during labor, students inquiry peaks. The students want to find answers and ask questions to determine what the sow is going through during the labor process. However, nothing builds excitement more than when the students see the first piglet born within the school walls. Students interact with followers through facebook live updates, talk with followers on the live camera feed, and work to care for the piglets during the entire labor process until the sow has finished labor.

Engaging The Students

Days following the birth, students engage in the care and maintenance of the sow and her piglets. Students monitor to the sows feed intake, process the piglets, and ensure the living environment remains clean. Additionally, students configure average daily gain and learn about the importance of ear notching for identification. The strongest part of the Think OINK Project begins when the students and their family descide to purchase a Think OINK piglet for their Supervised Agricultural Experience where they take the

learning to the next level. Students feel they have ownership in it because they were there for the birth and assisted in the care of their pig as a piglet. With the purchase of the piglet, the students must maintain their record book and exhibit the pig at the local fair. The engagement is inevitable through the entire process and well into the end.

Building Relationships

We all know that trusting relationships are a key component to our jobs. Whether it is the bookkeeper who writes that last minute check for us, or the janitor who checks the heater in the greenhouse, we rely very heavily on relationships to excel in our positions. The Think OINK Project is no different and our trusting relationships had to start at the base with those same people.

I approached my administration with a project plan and procedure that not only outlined the short term benefits of production practices, but also the long term benefits such as student SAEs and Agriscience Fair Projects. With a supportive administration and school board, we moved forward to finding a supportive cooperating farm.

Brockman Farms, a small but competitive show pig farm, that focuses very heavily on youth development agreed to sponsor a sow for the Think OINK Project. Our relationship with Brockman Farms serves as the backbone for the Think OINK Project as the owners not only supply the sow and numerous resources, but also take time out of their lives to oversee the delivery of the piglets with my students as well as teach the students about the many processes in the swine industry.

Seth Swenson, owner of

Showtime Sires Boar Stud, was very supportive of the local project and sponsored semen for the breeding of the Think OINK sow! Just like Brockman Farms, Seth recognized the dynamics of the project and how it combined aspects of moden pork production with the ability to engage youth. This partnership was very valuable for the Think OINK Project as it allowed students to purchase the show pigs at a reduced cost. Additionally, it kept the program from having to utilize excess funds.

Today's Think OINK

The Think OINK Project is all lined up for the Spring of 2019 and the students are excited to welcome their new sow, Alberta Einswine, and her piglets at Streator High School. The opportunities are endless with this project as multiple classes in an ag program can benefit from it every year! From the leadership and communication course that can discuss proper social media communication to the veterinary science class that can assist with vaccinations and feed rations. Any Ag Program can incorporate the Think OINK Project.

Please visit www.facebook.com/thinkoink40 for more information on the Think OINK Project or contact Riley Hintzsche at rhintzsche@streatorhs.org



Riley Hintzsche is the agriculture teacher at Streator Township High School (IL).

Hands-On Learning in Agricultural Education

by Devan Johnson and Donna Westfall-Rudd

Throughout history, educational professionals have noted experiential learning supports student mastery. Students may find it difficult to comprehend and retain knowledge from regular classroom instruction alone. Many students cannot remain focused on one task for an entire class period. When teachers incorporate experiential learning into the lesson plans and switch class activities from regular instruction to a hands-on activity, students may find it easier to recognize the concepts taught and remain focused.

Veterinary Science

Experiential learning was integrated into the veterinary science course to help improve students' perceptions about agriculture and enhance the comprehension and knowledge retention of the course content. Working on applied learning projects enabled the students to make connections between what they have learned through lecture and the knowledge used to solve problems and reach solutions for veterinary science. The students also participated in experimental activities where they used the knowledge from lecture and their hands-on experiences to create hypotheses and test those hypotheses to improve their knowledge in the content area.

During the musculoskeletal unit, students used various materials to simulate a cross-section model of the bone. Red pipe cleaners were used to represent blood vessels inside of bone marrow made of yellow play-dough. The play-dough was wrapped

in sponge cloth to represent spongy bone. Next, the compact bone was made from a cardboard tube. It was wrapped in a white paper that simulated the periosteum with red blood vessels drawn on it with a marker.

For the circulatory system unit, students made a model to understand the components of blood. A clear water bottle represented a blood vessel. Inside the blood vessel, water was filled to 1/3 the bottle's capacity. Next, yellow food coloring was added to simulate plasma in the blood. Next, cheerios with red food coloring were added to represent red blood cells. They were the most abundant. Miniature marshmallows were added next to represent white blood cells. Finally, fuzzy pom-poms were added to represent platelets.

During the respiratory system unit, students created a lung model using a clear, empty bottle, two

For the unit on the digestive system, students worked together using various colors of play-dough to form each part of a digestive system. Upon completion, they compared their model to the models created by the other groups. Each group created a model of a ruminant, non-ruminant, and poultry digestive system.

During the unit on endocrine and immune systems, students participated in a parasite lab. Every student examined a fecal sample under the microscope to determine if parasites were present. After discussing their findings within their group, each group rotated to a different station. The students looked at fecal samples from three different horses with varied deworming schedules.

Within the same unit, the students also practiced giving injections. Each group was given three bananas, three syringes, three dif-

When teachers incorporate experiential learning into the lesson plans and switch class activities from regular instruction to a hands-on activity, students may find it easier to recognize the concepts taught and remain focused.

straws, tape, and two balloons. The bottle represented the thoracic cavity. Two straws were taped together with a stretched balloon taped to the end of each straw. The straws and balloons were placed inside the bottle. Students could then blow into the straw and visually see how the respiratory system works by oxygen going into the trachea and filling the lungs.

ferent gauge needles, and a cup of water with blue food coloring. They were also given a handout on proper injection angles for various routes of administration. By injecting the blue water into the banana, the students were able to feel and see the difference between giving the injection subcutaneously and directly into the muscle.

During the surgery unit, stu-

dents were given the opportunity to play pin-the-part-on-the-animal to learn the proper anatomical terms and their locations. Each group was given a large cutout of an animal. One group was given a set of external anatomical terms, while the other group was given a set of internal anatomical terms. When both groups were finished and had all of the terms in their correct locations, the group switched sets of terms. This activity enabled students to visualize the words on the proper locations of the animal.

Student Feedback

After completing the experiential learning activity for each unit, students were asked to blog about the activity, their understanding of the content, and the knowledge they gained from their experiences. The students were given open-ended questions to guide their writing. Students were free to express their true feelings within their blog posts.

Student's blogs were analyzed to determine if students found the experiential learning activity helpful in understanding the content and retaining knowledge learned throughout the unit.

By analyzing their blogs, it was found that the majority of students favored either experiential learning or a combination of visual, auditory, and kinesthetic learning. The majority of the student participants also preferred regular classroom instruction followed by the hands-on learning activity, rather than vice versa. All of the students recommended that students in next year's veterinary science class and students in other agriculture classes should complete hands-on learning activities.

When comparing regular

classroom instruction with hands-on activities, the majority of students found hands-on activities more beneficial to their knowledge and understanding. A few students answered that in certain units, regular classroom learning was more effective. Two students answered that both teaching methods were equally effective. Also, every student participant felt that their knowledge of the current material had increased significantly from the beginning of the unit. All student participants responded in every blog that the use of hands-on activities was helpful in increasing their knowledge and understanding of the unit content. All participants also responded in every blog that the hands-on activity was connected to the curriculum in a way that allowed them to see the correlation between the two.

Recommendations

Experiential learning was found to be beneficial when incorporated into the Veterinary Science course; however, many school programs do not possess the finances to purchase teaching kits or other tools for experiential learning activities in the classroom. Within this course, all of the activities were from the Pinterest website. All of the materials used for the activities were purchased at a local discount store. As a result, students were better able to understand the content through inexpensive experiential learning activities.

One limitation of this project was time. Given more time, activities could have been longer and enabled proper blog writing. This course allowed students to use technology blogging about their hands-on experiences. While

many female participants did not mind blogging, a few males did not enjoy blogging. The blog assignment could be adapted to fit the students' strengths and talents. For example, students could be given the choice of answering questions, synthesizing their work in 25 words, or finding pictures or articles that relate to the activity being performed. Blogging could be used in the place of lab reports in which students could be graded on their work and how well they understand the content.



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There is Luck in the Draw

by Amanda Kacal

Friday night lights, homecoming mums, and senior proms are some of the more popular traditions in our Texas high school culture. Family and community share the most valued traditions, and often these “rites of passage” are passed down through generations. In our school district, the Katy ISD Livestock Show is one of those traditions. From the parade downtown, to the Sale of Champions that earns students over half a million dollars, this event, beginning in 1943, is the pinnacle of our FFA year for students from eight high schools in Katy ISD.

As agricultural educators, we have the privilege of teaching in a variety of educational environments that enhance student learning outside the traditional classroom (Kacal & Brown, 2012). The Katy ISD Livestock Show is a non-traditional classroom that not only benefits the students through supervised agricultural experience but eliminates days missed and miles driven across the county by agricultural education instructors. In Katy ISD, we participate in a livestock show that is labeled a “draw show.” Livestock is purchased in groups, students draw numbers, and the pick commences. Several urban and suburban programs across the state of Texas provide draw shows for their students. Granted, this type of livestock show may not appeal to everyone but it certainly deserves a closer look. Draw shows could easily benefit many communities.

Equitable Opportunity

In our case, the school district secures all livestock for the show. Depending on the species, each exhibitor pays the same price for their livestock project. We currently show steers, swine, goats, lambs, market broilers, and rabbits. Livestock is contracted from one or more breeders of each species. Each breeder agrees to bring a certain number of animals at a contracted price. Agricultural education instructors play a vital role in selecting and inviting specific breeders to submit bids and bring animals for the draw.

A set price gives every student the chance to be involved. Rather than paying what could amount to astronomical prices for show projects, a more realistic price is charged for these animals. Students with limited income have a greater opportunity to participate. County and major-show hogs may cost anywhere from \$500 to \$5000, but group buy-hogs can be purchased for \$250 each. There is bargaining power in numbers and when breeders are approached with the possibility of selling 25 to 30 head at one time, they are much more likely to sell for a realistic price.

By using one breeder or a small set of breeders, the quality of livestock can be uniform. Breeders are given several months notice as to the number of animals they need to supply so they can be selective and bring a balanced set. Breeders also have the time to evaluate their set and omit animals that have issues with structure or illness. Most group-buy

contracts allow breeders to bring either males or females, with the exception of cattle. Livestock are uniform and groupbought, making it fair for all exhibitors. No one has to feel they have been “outbought.” Students can select each species based on their purchase price and housing preference.

Cost Effective

Every year school districts pay thousands of dollars in travel for teachers to search the state and country for quality livestock projects. Not only does this cost departments a lot of money, it takes teachers out of the classroom multiple days for buying trips. At our high school alone, we each racked up over 1,300 miles looking for livestock projects for students in 2018 for both county and state livestock shows. These are miles on personal vehicles, not vehicles owned by the district. Group-buy livestock are contracted from breeders and often only one teacher needs to travel to preview the livestock to confirm their quality prior to the draw. Hence, less money is spent and fewer days are missed away from the classroom. School administrators love saving money and support the draw concept.



Breeder Rapport

This year, our district livestock show had 107 exhibitors pay for goat projects. Breeders brought 120 goats to our draw and the exhibitors each selected their project. Even when the last person picked, there were 13 goats left to choose from. No one ever feels they have to take “what’s left.” By supplying extra numbers, the quality issue can be addressed. If a breeder brings inferior animals, he may not sell many. Breeders are only paid for the animals that are selected. If they want to sell out, they will bring quality livestock. The breeder takes remaining livestock home.

Teachers are able to build positive rapport with breeders using the group buy concept. When other projects are needed for state or county livestock shows, these breeders can serve as a vendor for additional projects because of the relationship that is already established. Teachers can get a feel for how each breeder’s livestock act, grow, convert, and finish out. They can use this knowledge to select future projects for students. If you think about it, it is kind of like a test drive, with multiple chances to do so.

The Draw

Perhaps the most exciting part of a draw show is selection day. Students line up by grade level and reach into a bucket to collect a token with a number on it. Of course, everyone wants to be the first pick and prays not to be the last. Parents, siblings, and grandparents come out to show their support on selection day; it is truly a family affair. After all exhibitors have selected their numbers, organized chaos begins. Each student is allotted two minutes with their

respective agricultural education instructor to select the animal they will raise in the coming months.

As an agricultural education instructor, it becomes a race against the clock to pick the best animals at the opportune time for each student with the highest of hopes. As teachers, our livestock knowledge is put to the test, and sometimes challenged, as students want “a cute one” or “a belted one.”

Impact of the Draw

Each year, the Katy ISD Livestock Show is home to over 500 exhibitors in our suburban community. We sell a maximum of 114 lots in the premium livestock sale and the remainder goes to the freezer sale. It is not a perfect system, but it has great benefits for our students. For students in Katy ISD, this might be the only experience they ever have showing livestock and we believe this is a reasonable and equitable way to reach many students of all demographic backgrounds in our large community. The truth of the matter is, if you want to show at the local FFA show, you have to draw.

This is not a fool proof or perfect system. Some feeders do everything right and do not make the premium auction; animals get sick or have structural problems down the road, and some of the best ones are not tended to as well as we would like. Occasionally, breeders do not bring quality animals and they are not asked to come back the next year. Pedigrees and breeding are always in question with this format. Students are not able to run with the best one they can afford, but are limited to what breeders bring to the draw. FFA advisors are knowledgeable in the livestock arena with years of feeding, buying, and showing live-

stock. However, in a draw show, so much of the success is related to the luck of the draw, which almost takes the advisor totally out of the equation. Even the best feeders can hold the short end of the stick.

In summary, the draw show is an avenue that gives many students the opportunity in our suburban community to produce an animal for human consumption, thus increasing their agricultural literacy as a consumer. These students can buy a project and not feel like they are at an unfair advantage because of economic hardship; each student has the same opportunity as the next person. This format allows several hundred students the opportunity to have a production SAE without the added burden of travel for teachers. It may not work for everyone but it is a tradition in Katy, dating back to the early 1990s, that is still going strong. The next time you are considering leveling the playing field in your community, consider the luck of the draw.

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The Warmest Shadow: A Father-Daughter Teaching Transition

by Casie Forbush, Mark Forbush and Aaron McKim

In 16 years at Michigan's Corunna High School, Mark Forbush built an Agriculture, Food, and Natural Resources (AFNR) Education program that met every definition of success. During his tenure, the program consistently placed at, or near, the top of the National Chapter recognition; was a National Model of Innovation winner; went 11 straight years as a three-star National chapter; totaled 37 state-winning CDEs; saw membership grow from 57 to 168; and changed from a one-teacher to two-teacher program. Mark also excelled, receiving his Honorary American Degree and being awarded the Outstanding Agriculture Educator in Michigan. One of the most significant accomplishments, however, was the hiring of his daughter to co-lead the program. Mark's daughter, Casie, reflected on her decision to become an AFNR Educator:

I decided to enter AFNR Education because a friend said, 'You should be a teacher.' I asked her why, and she mentioned that I explained the work in our class three different ways to three different people to help them understand. 'That's what good teachers do,' she mentioned. So, I thought, 'Well, I like agriculture, I like working with other people, and I love the FFA – why not put them all together and be a teacher!' Plus, the expert in the field happened to eat dinner with me every night. Watching my dad as an AFNR educator my

whole life, I was able to witness the unique impact he had on students and knew I wanted to have a similar impact.

When asked about her emotions getting the teaching position at Corunna, Casie shared:

I was very excited and very humbled. I knew it was a unique opportunity to get the chance to work in the program I grew up in, and I wanted to make sure I did it justice. I was greatly looking forward to working alongside my dad.

Mark also shared his enthusiasm for being able to work with his daughter:

I was excited for her and for Corunna. Casie is a strong teacher with a strong commitment to students and the FFA. I am a typical dad; very proud of all of my children. Casie has a degree and a job she really loves. What more can a dad ask for?

As the Forbush father-daughter team planned Corunna's future, the Michigan State Supervisor for Agricultural Education position opened. Mark reflected upon the decision he faced to remain teaching or transition to a new opportunity:

I really enjoyed teaching and knew I wanted to teach until my children had graduated from high school. After that, I only wanted to look at positions in AFNR Education at the state level if I was going to move from Corunna. Casie was hired before I applied for [the State Supervi-

sor job], which made it harder to move. When it opened, my high school principal and superintendent encouraged me to look at this new job. They thought I could make an impact on the state level to help get more students in AFNR Education; but also, they both said I could help young teachers across the state.

After accepting the State Supervisor job, Mark began wrapping up his tenure at Corunna and tackling a brand-new position. During this time, Brian Kiesling – who also took AFNR classes from Mark as a high school student – was hired to lead the program with Casie. Mark was asked to share the things he felt were most critical to successfully “handing off” the program to Casie and Brian:

For the last couple years, do the little things right: (a) make sure there was a very clear and well organized POA; (b) be sure I had clear course pacing guides for all classes and a solid course instructional design which would ensure good funding for the program during changes in state funding; (c) save everything electronically and have a plan to ensure these files were backed up and available for the new teachers; and (d) make sure I worked with our administration to improve equipment.

From her perspective, Casie was also asked to identify the most critical things her father did to transition the program:

The first and most important

thing he did was keep accurate records and files from his time in Corunna: POA's, artifacts for successful fundraisers, applications for officers and conferences/conventions, sample thank you letters to local businesses, a general outline of units covered in each of the courses and teaching materials, etc. Secondly, he left our program with a sound budget - not only a positive balance, but a large one and a set budget of what was spent and taken in each year. Lastly, he built a huge group of supporters. He did a great job keeping them in the loop as well as myself and Brian during the transition.

While not in the same school, Mark and Casie have continued to work diligently to enhance AFNR Education in Michigan. Mark reflected on his new role as the State Supervisor:

As an AFNR teacher, I spent time with my students in class and visiting SAE projects (i.e., over 120 SAE project visits each summer). I have taken this approach to my new position and will have visited all 109 Michigan programs at least once in my first two years. I have also initiated two new projects, including a program connecting Michigan's AFNR Education Segments to the Next Generation Science Standards and a new, early-career teacher workshop.

Given her father's 16-year tenure, Casie was asked to reflect on the challenges she has experienced putting her own "stamp" on the program:

I am already getting students who don't know who my dad is,

so the connection between him and I isn't there. This is hard for me to grasp; he was such a huge aspect of our school for a long time! But my dad and I talked about how quickly that would happen. So, in that sense, I haven't had a hard time putting my own stamp on things. In other ways, it's not always easy, simply because 'it wasn't done that way before.'

The transition within the Corunna AFNR Education program was unique and provides an interesting perspective into preparing a program to be successful under new leadership. To wrap up, both Mark and Casie were asked to share final thoughts. Here is what Mark shared:

Any success I had was due to great support from many people. Community members, professionals from across the fields of agriculture, and the support of the people at my home that accept that I have a job that takes more than 40 hours a week to do it right. This is my passion.

Echoing her father's passion for AFNR Education, Casie concluded:

I am very lucky to be in the position I am in - the stars perfectly aligned to enable the current situation, and I am very thankful that I am able to be a part of it. Working in AFNR Education is definitely my passion, and I am blessed to be doing so with such a great group of individuals.



Casie Forbush is an AFNR Education Teacher and FFA Advisor at her alma mater, Corunna High School, in Corunna, MI.



Mark Forbush is the State Supervisor for AFNR Education and the State FFA Advisor in Michigan. Prior to taking this position, he taught AFNR Education for 30 years in Michigan.



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Fostering Creativity and Critical Thinking in the Agricultural Education Classroom

by Asha Shayo, Lane Woodward, Chantel Simpson and Rick Rudd

Creativity and critical thinking produce novel outcomes (Kirton, 2011). Problem-solving involves creating a new response to a situation, during the process there is always creativity and critical thinking. Teaching students agricultural concepts involve creativity, critical thinking and problem-solving. It requires instructors' knowledge, experience, and technology teach students in order to create novel solutions. Often in the agriculture classroom creativity may be displayed in projects or presentations, but most often in the welding booth. For creativity to take the spotlight, we have to change how instructors view and utilize creativity. Creativity can be measured by looking at originality because that satisfies the need for the solution to be novel. But a novel idea is still not a vi-

able solution if it is inappropriate.

Scholars define creativity and critical thinking in various contexts. For this article few definitions will be shared for a broader understanding of creativity and critical thinking. Rudd, Baker & Hoover (2000, p.5) defined critical thinking as, "A reasoned, purposive, and introspective approach to solving problems or addressing questions with incomplete evidence and information and for which an incontrovertible solution is unlikely." On the other hand, Halpern (2014, p.6) defined critical thinking as "applying knowledge in real-world settings, analyzing and solving problems, connecting choices to actions, and being able to innovate and be creative." Creativity defined by Sternberg & Lubart (1999, p. 10) as "the confluence of intrinsic motivation, domain-relevant knowledge and

ability, and creatively-relevant skills. The creatively-relevant skills include (a) a cognitive style that involves coping with complexities and breaking ones mental set during problem solving, (b) knowledge of heuristics for generating novel ideas, such as trying a counterintuitive approach and (c) a work style characterized by concentrated efforts, an ability to set aside problems and high energy"

Based upon the mentioned definitions, creativity and critical thinking create novelty, solve problems, and require relevant skills to accomplish the desired outcome. Critical thinking and creativity often overlap. The neuroscience of learning shows that learning occurs in different parts of the brain. For example, the analytical thinking is centered in the left hemisphere where creativity is not localized in one brain region and does not depend on a singular mental process (Schunk, 2015). Therefore, critical thinking and creativity cannot be separated from problem-solving. Critical thinking provides a vehicle for creativity in the agriculture classroom. Asking students to think critically increases the likelihood that their solution will be appropriate. Designing assignments that require the student to think and use previous knowledge activates areas of the brain and forms connections so that working memory is transferred to long-term memory (Schunk, 2015), and is accessible when the student is expected to complete an industry certification or program completion exam.



Critical Thinking and Creativity in Agricultural Education

Teaching agricultural education requires innovation and multidisciplinary approaches. Scholars extend their argument that creativity and critical thinking does not occur in empty space, but in well-planned and thoughtful instruction. The learning environment shapes their proficiency in creativity and thinking skills. Sternberg & Lubart (1999, p.11) mention that creativity requires a confluence of six distinct but interrelated resources: “intellectual abilities, knowledge, and style of thinking, personality, motivation, and environment.” Students require different settings that allow for knowledge learned to be connected to the real world. Suggesting that programs be designed to not only offer rigor but relevance as well. According to Sternberg & Lubart (1999), intellectual abilities are essential to get away from conventional thinking; students should have the ability to view the problem differently. They also should have the ability to identify concepts worth pursuing — the ability to respect cognitive diversity (difference in thought process), respect and other people’s values.

Techniques of Critical Thinking and Creativity in Agricultural Education

Various techniques can be used to integrate creativity and critical thinking into agricultural education coursework. The use of diverse techniques allows teacher and students to engage in active learning which creates enthusiasm and motivation to learn. Engaging various stakeholders in agricultural education helps students and teachers to learn new concepts

that may increase novelty both as an individual and as a group. Torrance (1970) recommends various techniques to encourage creativity in the classroom:

- Engage student in unpacking ambiguities and uncertainties
- Deepen student anticipating and expectation
- Sharing the magnitude of the problem to be solved and knowledge gap
- Ask provocative questions
- Clear elaboration of the purpose of the activity
- Provide clear direction of the activity
- Encourage creative and constructive ideas
- Build a good creative problem-solving process
- Awareness of student’s capabilities
- Constructive response to students
- Help make divergent thinking legitimate
- Engage students in practical activities
- Entertain impossibilities

Beyer (1987) lists the effective critical thinking skills in agricultural education as:

- Distinguishing between verifiable facts and value claims
- Distinguishing relevant from irrelevant information, claims, and reasons
- Determining factual accuracy of a

statement

- Determining credibility of a source
- Identifying ambiguous claims or arguments
- Identifying unstated assumptions
- Detecting bias
- Identifying logical fallacies
- Recognizing logical inconsistencies in a line of reasoning
- Determining the strength of an argument or claim

The impact of critical thinking and creativity in teaching is paramount. The above techniques can be modified depending on the context. Various aspects can be observed when implementing techniques in agricultural education such as environment, student cognitive ability, the purpose of the activity to mention few. As we know, the aim of teaching agricultural knowledge is for students to be able to understand agriculture broadly and how it is integrated



within other subjects and contexts as well. The impact is to design creative solutions to the problems. Another impact is the ability of students to create novelty.

We all differ in our extent and styles in creating solutions. Creativity is linked to intelligence, so it is a trait we all possess. It cannot be taught only activated and enhanced. Critical thinking skills can be taught, and it is one of the critical factors for student development; however, it depends on the teacher's techniques to make sure that critical thinking is well taught. You cannot enhance creativity if you cannot think critically. Instructors in agricultural education programs should create activities that utilize multiple approaches in order to develop a student's creative and critical thinking abilities. It also requires structure and both student and teachers' willingness to participate in those activities. Identifying learning outcomes by using active learning techniques, divergent questioning and interactive discussions will enable the student to gain broader knowledge about agriculture. It is also essential for the instructor to provide feedback to students. Instructors should be aware of the cognitive diversity among the students and provide activities that will engage all students. It is essential for the teachers to provide education to students that will prepare them for success and contribute to the agricultural industry.

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How Can Agricultural Educators Influence Their Students to Become Teachers?

by Elissa Hendren and John Tummons

Secondary Agricultural Education is not fulfilling its potential. The prime suspect? A shortage of appropriately trained and qualified teachers. In 2017, 499 (38.6%) first-year agriculture teachers were alternatively or non-certified; an additional 72 full-time positions went unfilled and 52 programs were lost nationally (Smith, Lawver, & Foster, 2018). We cannot grow our impact without increasing our teacher supply.

The shortage is not a new problem- the *10X15 Initiative* (Council, 2007) and *Reinventing Agricultural Education for the Year 2020* (Council, 1996) both identified an abundance of highly motivated, well-educated teachers as

a primary component of Agricultural Education success. So what's the issue? Agricultural Education has a great product (classroom instruction, SAE, and FFA), strong support structure (101 teacher training institutions, dedicated state staff, strong professional organizations), and action steps to address the shortage (Teach Ag! campaigns, dedicated financial aid), yet we still close programs each year for lack of teachers. To address this issue, we examined how current teachers chose a career in Agricultural Education.

Most agriculture teachers were involved in high school Agricultural Education as students (Saucier, Tummons, Terry, & Schumacher, 2010). The local

agriculture teacher can be a powerful example (Rice, 2015) and may influence a future teacher's decision to teach agriculture (Rice & Kitchel, 2015). Based on this research, we decided to ask current and future agriculture teachers how their agriculture teacher influenced their decision to teach.

We used a grounded theory approach to build a model showing how high school teachers influenced an individual's decision to become an Agricultural Educator (see Figure 1). Researchers conducted four focus groups with 25 different preservice/in-service agriculture teachers. All participants were enrolled in high school agriculture programs as youth.

Researchers found teachers in the first two focus groups were primarily influenced to teach through *intrinsic value* and *working with adolescents* (Lawver & Torres 2011). We conducted two more focus groups, focusing specifically on conditions, strategies, and consequences employed by the local agriculture teacher within these two predictors.

Findings

Every participant indicated their high school agriculture teacher had a substantial impact on their decision to become an agriculture teacher. Al-



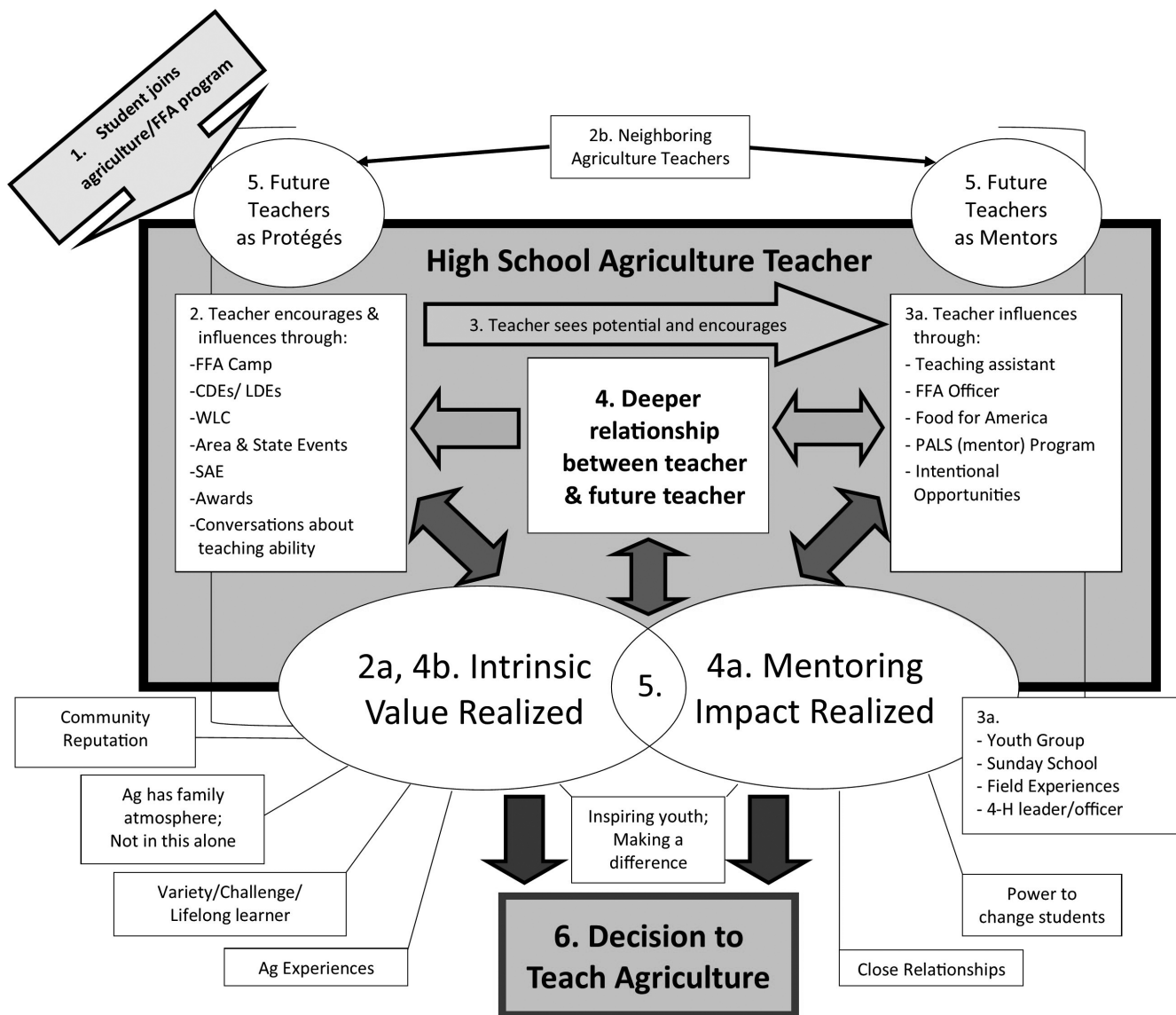


Figure 1– Process of agriculture teacher influence on students to become agriculture teachers.

though most participants indicated their teacher made a positive impact, a few participants were motivated because of a negative high school agriculture experience.

Let’s follow Frank (a hypothetical high school student) through the model as he decided to teach agriculture. Notes: This model is not linear, and not all students will follow this path. Infer with caution.

Frank enrolled in the Agricultural Education program and joined the National FFA Organi-

zation (1). Ms. Gregory, Frank’s agriculture teacher, encouraged Frank to present the FFA Creed in class, compete in the Livestock CDE, and to attend FFA Camp (2). Frank appreciated the variety and challenges of these experiences. At the banquet, Frank received the Star Greenhand Award. Franks’ efforts were rewarded, and he saw how the teacher and program were respected in the community, thus building intrinsic value (2a).

Ms. Gregory saw potential in Frank and encouraged him to seek

leadership roles (3). Frank volunteered to plan Food For America; he also ran for chapter office and was elected Treasurer (3a). Frank took leadership roles in church and 4-H (3a), further building Frank’s role as a mentor and peer leader.

Food for America was a success. Frank reflected on his success with Ms. Gregory, which developed a closer relationship with her (4) and helped Frank realize how his leadership impacted other students (4a). Frank attended WLC, earned his State FFA De-

gree, and created a PALS program for younger students. Frank served as both a leader and protégé (5).

Frank began thinking about college; he trusted Ms. Gregory's advice (4), so he asked her about becoming an ag teacher. Ms. Gregory told him he should NOT follow in her footsteps! Frank considered Ms. Gregory's

Every participant indicated that their high school agriculture teacher had a substantial impact on their decision to become an agriculture teacher.

advice, but ultimately decided to follow his heart and pursue a degree in Agricultural Education (6), as the cumulative effect of his experiences and Ms. Gregory's actions helped Frank reach a "tipping point" in his decision.

Conclusions/Recommendations

Since a majority of current teachers come from Agricultural Education programs, and teachers have the capacity to build intrinsic value and mentoring opportunities for their students, then empowering current agriculture teachers as recruiters is the first and most important step in addressing the teacher shortage.

Get Students Involved Early

Teachers mentioned SAE, CDEs/LDEs, FFA Camp, and attending area and state FFA events impacted their decision to teach. Not only do quality classroom, SAE, and FFA activities facilitate recruitment, but they also promote high student attendance/involvement, which is an efficient use of teacher's time and

an indicator of a quality program.

Encourage Students to Lead

Students who accept leadership roles can realize their potential impact on others. Teachers identified serving as an officer, teaching assistant, Food for America organizer, and other intentional opportunities (created by the agriculture

teacher) as impactful to their career choice. When students led their peers, they realized their mentoring

impact and developed a closer relationship with their agriculture teacher. We encourage teachers to picture themselves as a mentor, seeking to coach and support young leaders through the chap-

ter's Program of Activities (POA).

Reflect on Mentorship Impact

Kolb's Experiential Learning Theory suggests change only occurs after reflection. We must make time to reflect with students about their concrete leadership experiences. Reflection builds the teacher-student relationship and creates opportunities for further leadership roles and more responsibility. Reflection on a job well done can also build intrinsic value and helps prospective teachers realize their potential impact as educators.

"Hoot" your own horn

Remember when Ms. Gregory told her student NOT to follow in her footsteps? Many participants reported their agriculture teacher discouraged them from becoming an agricultural educator. Agriculture teachers are great at recognizing



Empowering current agriculture teachers as recruiters is the first and most important step in addressing the teacher shortage.

ing the efforts of others, but we are often our own worst enemy in terms of recruitment. It's important we find positive aspects to our job, focus on doing tasks which fulfill us, and most importantly, share our successes with our students, parents, administrators, and the community.

The agriculture teacher shortage is a problem with no easy answers, but the answer we seek are sitting in our classrooms today. Have you TAGGED your replacement?

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Community Viability for the Total Program

by Lane Woodward, Sarah Bush, Chantel Simpson, Asha Shayo and Rick Rudd

Agricultural education programs can be viewed as communities that include teachers, students, parents, school personnel, and supporters. For a community to be viable, it must be resilient, sustainable, and provide opportunities for individuals to lead meaningful lives (Hogg, Bush, Rudd, & Seibel, 2016). The community viability indicator (CVI) model uses four constructs to examine community viability: community sentiment, capable leaders, sustainable infrastructure, and community vision (Hogg et al., 2016).

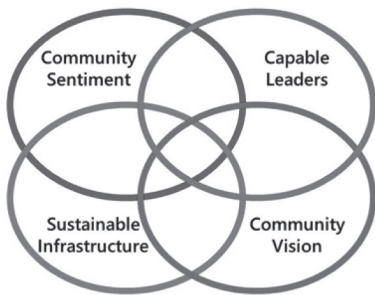


Figure 1. Community Viability Indicator (CVI) Model developed by Hogg et al. (2016)

The CVI model includes the four elements as intertwined constructs (Hogg et al., 2016). Community sentiment includes enthusiasm, tradition, and identity, which lead to active participation. Capable leaders are comprised of stakeholders, formal leaders, and opinion leaders. A community's vision includes their goals, plan, and strategic thinking. Sustainable infrastructure involves access to needs and social stability.

For example, capable leaders support the vision for the future by building infrastructure and rallying active participation. Community sentiment increases

an individual's investment in the vision, their drive to take on leadership positions, and economic support for building infrastructure. A sustainable infrastructure provides resources for members to increase leadership capacity and vision for the future. A vision for the future and strategic planning aid in building and utilizing existing infrastructure, driving leadership, and increasing community buy-in. Overall, focusing on these four constructs provides a community a clearer picture of priorities for program growth.

Based on the CVI model, building a total community in your agricultural education program requires inclusion of all members, resources, supporters, and stakeholders. This collectiveness allows for members and supporters to develop a sense of belonging. Knowledge acquired in the classroom should be practiced, observed, and shared in the community to bolster community sentiment and buy in from community members and potential supporters. This should result in a network of supporters willing to contribute to their communities and agricultural education.

Classroom instruction, FFA leadership, and experiential learning through SAE participation create the total program as shown in Figure 2. The center is where all three areas converge, and the local agricultural education community comes to life! The total program develops a community of agricultural students within the larger community, which encompasses teachers, other students, parents, school personnel, business own-

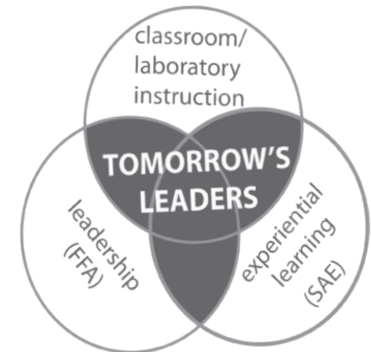


Figure 2. Agricultural Education Total Program Model (NAAE, 2017)

ers, stakeholders, and supporters. By utilizing this larger community, teachers can increase their success in implementing the total program. For example, teachers can create a network of business owners and stakeholders to provide placement opportunities and develop Supervised Agricultural Experiences (SAEs). Local community leaders can aid in providing leadership opportunities for FFA members. Classroom instruction can incorporate hands-on experiences combined with real-life community scenarios for connection between topics and the local community.

The total program provides students with opportunities to learn content, develop leadership skills, and put their knowledge into practice. Some of these opportunities include planning, organizing, and implementing FFA events and activities. Teachers can provide opportunities for their students to explore and understand how pervasive power can be on communities and in organizations. Chapter officers can develop an understanding of the positional power they hold and how to effectively manage power to make all members feel heard and as equal parts of the organization.

This not only develops capable leaders for the future, but also increases student buy in and their sense of belonging that ultimately drive community sentiment.

SAEs can also be harnessed as opportunities for students to explore different career paths in their local communities. They allow for students to learn decision-making skills and how to create strategic plans. These students can understand the type of meaningful life they could lead and how they can positively impact their local community.

Agriculture teachers often seem pressed by time or rather a lack of it. This often results in advisors being the driving force in their FFA chapters rather than serving as an auxiliary advisor and providing opportunities for students to run their FFA chapter. Students with more opportunities for ownership become more engaged in their chapters. This increased buy in and engagement can boost fundraising and volunteer support, which increases sustainability of the day-to-day functionality of a total program or infrastructure.

A total program should have a reciprocal relationship with their supporters, stakeholders, and local community. Community involvement increases opportunities for students to have applicable experiences as previously described through SAE and leadership experiences. Inversely, the total program benefits the community by providing opportunities for students to explore careers in the community as well as increase their sense of belonging and citizen participation.

This approach begins with community visioning. Students,

advisors, supporters, and stakeholders should join together to analyze their infrastructure, leadership, sentiment, and previous vision. This approach to community viability for a total program includes a lot of heavy lifting on the front end, which typically falls on the teacher. However, once students begin to organize, become involved, and fully understand how the constructs impact their communities, the workload will shift to the students and program viability will increase.

Other than reducing the workload on an agricultural teacher what are the benefits of using the CVI model with the total program? Resiliency and sustainability are two words frequently used in the agriculture industry, but we rarely utilize these terms to consider agricultural education programs. However, local programs experience frequent changes including: instructor and student turnover, changes in supporters, and funding. Recently, many school systems have experienced budget deficits, which forces schools to restructure budgets and make program cuts. To ensure our programs are viewed as valuable, we must build strong total programs, which are resilient and sustainable.

Incorporating the CVI model in a total program can increase student and program success. Total communities encompassing a variety of stakeholders can support program growth, increase opportunities for members, and benefit community members. These efforts provide opportunities for agricultural educators to demonstrate the benefits of the program to current students, alumni, future students, the school and the local community.

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