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Tell Me Something Good

Focusing on the Good

by Gaea Hock

As the editor of this magazine, I work to identify themes about a year out in order to secure theme editors and allow potential authors to see where their work might fit in the upcoming year. Last summer as I worked on identifying theme editors and topics the song “Tell Me Something Good” was playing in my head. It gave me the idea to have an issue to celebrate the end of the academic year. I did not anticipate we would still be navigating through the pandemic, but rather wanted an issue to focus on positive stories to celebrate all the good things happening in our programs.

This year has presented plenty of challenges. Each of us are doing the best we can to meet the many obligations of our jobs, families, and communities. Rather than focusing on those challenges, I worked hard to stay positive and enjoy the simpler things such as spending more time with my young children, capturing everyday moments with my iPhone, practicing my baking and cooking skills, and working on my front porch when the Kansas wind cooperated. There were days when I had to remind myself to focus on the positives, anticipate better days while also living more in the moment, and take time to reflect and recharge. I hope you have also found positives to help you look forward to the future.

One of my favorite television shows is CBS Sunday Morning. I remember watching it as a kid before leaving for church and now I have my DVR set to record it each week. The variety of stories help me more fully appreciate the world around me and the diversity of people, places, and things. My favorite segment is On the Road with Steve Hartman. I love how he tells the story of ordinary people doing extraordinary acts of kindness and generosity. I always feel better after watching his segment.

I hope this issue also helps you feel a little better as you read about the people and activities from this past year. Each author articulates how they had to modify or adapt to current conditions to help their students learn and grow.

We start with a veteran teacher who decided this would be the year he retired from the profession. His article speaks to lessons learned and represents the many other teachers who dedicated their professional lives to teach agriculture. I thank him and all others who are retiring this year and wish them all the best! Also included in this issue are a couple of articles speaking to the need for global education and activities and how they shifted to accomplish goals while international travel was put on hold. Community service and service

learning experiences have been an integral component of agricultural education programs since the beginning of school based agricultural education. Several authors share projects and programs they supported to improve their local community. Finally, authors share innovative teaching and learning practices they initiated, refined, and evaluated during the last couple years. Several of the articles highlight practices we will continue to utilize as we return to a more normal state of education.

This year has been difficult, but I hope you are able to feel better after you read these articles, reflect on all that has been accomplished, and focus on the good.



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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Distribution

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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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Front Photo Courtesy of Catherine A. DiBenedetto
 Back Photo Courtesy of Kameron S. Rinehart

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“The Adventure Begins” A retiring Agriculture Teacher’s perspective

By Greg Schneider

On the hallway wall, just over the door to room 411 is a sign that reads, “The Adventure Begins”. Students see this sign as they enter the Agriculture Room. Inside the classroom, attached to the same cinder block wall, and over that same classroom door, is a rather large draft horse shoe. The shoe is displayed in the traditional fashion with the open end pointed up, so the luck never runs out.

It’s worked! I have been teaching agriculture for the past 30 years. 6 years at my current school and 24 years at another school just down the road, and although at times it has waxed and waned, the luck never has run out. The past 30 years have been a journey full of triumphs and tribulations; joys and disappointments; and problems solved and lessons learned. I can still remember being a young teacher and watching veteran teachers on the verge of retiring from lengthy careers and wondering, “How did they do it?”

Drinking from a firehose. Starting a career in Agricultural Education can feel a bit like you’re drinking from a firehose. With this in mind, I am offering a few tips to help you manage.

Set boundaries and never second guess them. Identify your strengths as a teacher and find alignment with the needs and resources available in your school and community. Focus

on developing these areas first. Rome wasn’t built in a day; your program won’t be built that way either. Pace yourself. You’ll be able to add new facets as your skills and comfort level grow. But remember to adhere to your boundaries and understand the importance of being able to say, “No”. Both to others and yourself...especially yourself, because you’ll often want to do “one more thing”.

And don’t worry about keeping up with the Joneses. There will always be an agriculture program/ FFA chapter in your district that does something better. Keep the envy in check.

Celebrate their success with them, but don’t feel obligated to keep up with them.

You’ll find your own areas in which to excel and let that be enough. Otherwise you’ll be chasing that emerald green dragon your entire career. It’s the fast road to burnout and career dissatisfaction.

Stay the course. I can distinctly remember the start of my fourth year as the moment I decided I had what it would take to make it in teaching. I would encourage anyone to give this profession at least three years. I am



sorry to say the first year is going to be tough. The good news is by the second year you’ll start to figure it out. And by the third year you will make it your own. From then on, it’s just a matter of continual tweaking because you realize, “I got this!”

Work-Life Balance. Always, always remember: you can’t fill students’ cups if you are pouring from an empty pitcher. Never. Forget. This. Take time for yourself and find things you enjoy that are *away from school*. Too many people in our profession celebrate being overworked. Teaching is a marathon, not a sprint. Take time off, get away from your job and recharge yourself. Often. Your students and your family will thank you.

Relationships are key. “Students need to know you care before they care about what you know”. This statement is so true! The emotional turbulence that goes hand-in-hand with working with adolescents can be one of the most significant, challenging

and draining parts of the job. I'm not sure how well this was covered when I was in college. That said, I truly believe there are no "bad" students - just good students who occasionally make poor choices and the best way to handle any problem is to proactively seek to prevent it. Building relationships with your students is one of the most important, and rewarding, classroom management tools.

Speaking of relationships, be sure to get to know the other teachers in your school. Traditionally, Ag Ed Departments are in some distant part of the building. This fact will require you to be intentional in your efforts. Eat your lunch in the teachers' lounge and volunteer to serve on faculty committees. You're all in this together. Fellow teachers, of all subject areas, will be a vital part of your support network as you move through your career as an educator. You and your colleagues will come to rely on each other and it will make all the difference.

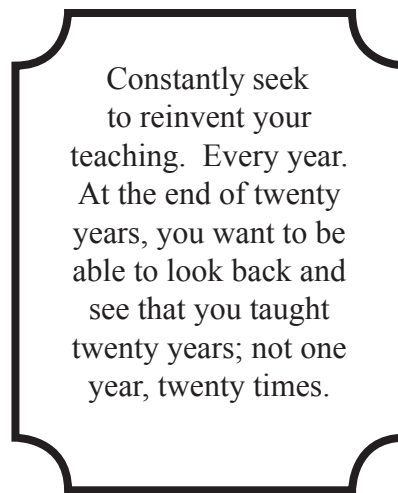
Be a Lifelong Learner. If you teach a topic enough times it becomes second nature and you tend to forget that your students are learning the materials for the first time. Professional development allows the teacher to occasionally take on the role of a student. Learning something new has a humbling way of reminding you of what it feels like to be confused. Embrace that confusion as it is often a necessary step in the learning process.

Once you feel like you are beginning to hit your stride as a teacher, beware! The greatest challenge is recognizing the difference between being in a groove and being in a rut.

Sometimes life circumstances will dictate having to teach the same year twice (birth of a child, buying a new home, transitioning to a new school, etc.). Don't make a habit of it.

Don't be afraid to learn alongside your students. If you have not figured it out yet, Agriculture is a very diverse subject area and you will not be an expert at everything. It's just not humanly possible.

Accept this fact before it destroys you. It truly does take a village and



Constantly seek to reinvent your teaching. Every year. At the end of twenty years, you want to be able to look back and see that you taught twenty years; not one year, twenty times.

you will find people in your village willing to assist you. Many people will have knowledge and expertise in areas you do not. Together, you and your community partners will be the collective expert and your students will benefit from these partnerships.

Create a classroom for all learners. The motto of our Agricultural Education Department is "All About Learning by Doing". This delivery method is entirely different from the standard "memorize & repeat" instructional practices so common in public education.

Believe in the efficacy of Agricultural Education's three-circle model. By providing a hands-on means for students to learn material; giving them the opportunity to put it into practice what they have learned; and then offering the chance to receive recognition for mastery of skills, all students can and will excel in your classroom.

Long ago I consciously shifted from thinking of myself as a teacher to thinking of myself as a "Facilitator of Meaningful Experiences". It was a game changer, for myself and my students. By presenting material through experiential learning, students achieve a level of understanding that cannot be obtained through rote memorization. Retention of knowledge is also much greater. These results are true for all learning styles. Some students are grateful for the change, as the pedagogy of traditional schooling has been difficult for them. Some students will push back and they will require a bit more assistance in finding success as they learn to engage their brains in ways they have not been asked to before. In the end, all students will develop the grit and resilience necessary to face the world and you will have played an important role in that inspiring task.

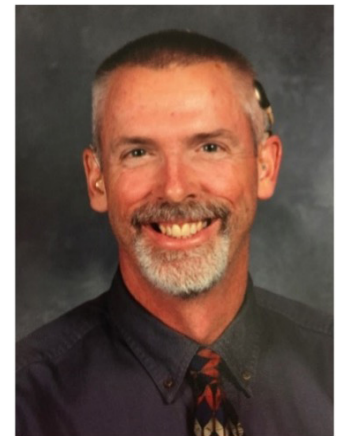
Announce early. When my children were young, I would occasionally have to carry them up the stairs at bedtime. At some point, it happened for the last time. Had I known it would be the last time, I would have savored that moment so I could treasure

Some students will push back and they will require a bit more assistance in finding success as they learn to engage their brains in ways they have not been asked to before.

the same experience. And as I shut and lock the door to room 411, I'm sure I'll read that sign on the hallway wall. Whatever the stage of your teaching career –beginning, middle or end - as you move ever forward, “The Adventure Begins”.

the memory. If at all possible, when you approach the end of your career, decide at the start of the school year when it's going to be your final year. At my wife's insistence, I made an announcement at our first faculty meeting. I had to say it out loud for myself more than for anyone else. This realization has allowed me to enjoy each final milestone as it has approached and passed by. And they will pass by. Treasure those memories.

Come the end of the school year, as I turn out the lights in the Ag Room for the last time, I'll look up at that horse shoe hanging above the door. In 30 years of teaching, the luck never did run out. This profession has by far been one of the most meaningful and rewarding careers I could have ever chosen. I hope you have



Greg Schneider is concluding his 30-year teaching career at Greensburg Community High School in southeastern Indiana. As his next adventure begins, he will forever be grateful for the opportunities he has had to make a positive difference in the lives of young people through Agricultural Education.

Navigating the Unforeseen: A Journey with 17 Lion Queens

by Jessica R. Spence

We all know the feeling—it's March 2020 and everything is cancelled. Trips, classes, and conferences are all no-longer. Conferences resume virtually, as do classes, but trips, including study abroad, are simply dissolved into nothing and a lost hope for an adventure.

At Texas A&M University, faculty were given the option to cancel their study abroad programs and complete the associated courses online, or to create a Virtual High Impact Experience (VHIE) instead of complete programmatic cancellation.

All but one program took the option to cancel—but the student-named “Lion Queens,” set to study photography and development in Namibia, had another experience coming their way. Faculty members Dr. Jack Elliot, and Dr. Tobin Redwine, and graduate assistants Jessica Spence and Dr. Nicole Deitzel quickly transformed their study abroad program into the first VHIE at Texas A&M.

Over the course of two weeks, students embarked on an adventure that included scavenger hunts, virtual reality, Zoom lectures from experts across the globe, and even physical postcards all contributing to their VHIE. This experience was based on combining virtual elements with interaction and reflection to successfully integrate Kolb's (1984) model of experiential learning. Students embarked on daily Zoom interactions with

Peace Corps leadership, tourism industry experts, the Executive Director of the Namibian Uranium Association, the Namibian U.S. Embassy officials, the Executive Director and in-country Coordinator for a U.S. NGO in Uganda, and exotic wildlife veterinarians.

The students took full advantage of the opportunity to speak to these individuals, and filled every minute post-lecture with questions and meaningful discussion. Students took their engagement one step further by taking it upon themselves to meet with some of these speakers on their own time in post-lecture interviews.

Small group engagement sparked with the use of GooseChase (2020), and the competitive nature of the scavenger-hunt style, teamwork-dependent game fueled the fun. This application broke the Lion Queens up into groups. In the “Pride Divide” GooseChase game, the Cheetah team, Caracal team, and Leopard team competed through in-app photography, videography, and text submissions to answer course-material based questions, all while practicing photography.

Together, we streamed documentaries *Milking the Rhino* (Simpson, 2009) and *Into the Okavango* (Gelin, 2018), and participated in show-and-tell photography presentations. During both of these activities, the students' participation, support for one another, and enthusiasm showed through the incredibly supportive, analytical, and constantly active chat box.

We may have been distant, but not every activity was virtual. Students received a box containing postcards, a pre-made Namibian wildlife editioned bingo game, and a 360-degree Google-cardboard headset. The Lion Queens

used the Google-cardboard to experience Namibia in 360-degree video footage. The videos were collected on the 2019 Namibia trip, and took the students on a sunrise safari, to a watering hole surrounded by elephants, and to a Namibian fruit and vegetable farm. They later engaged one another through GroupMe (2020) to complete the competitive bingo game using the post cards mailed to different group members.

Students engaged in individual reflection through concept notes. They wrote deeply about one idea, and shared these concepts in small-group discussions via Zoom. All together, we engaged in “Fireside Chats” and “Sundowners” in which students and facilitators came together to participate in large-scale discussions and debriefs—just like in Namibia.

The determination of the study abroad leadership, and innovativeness of the methods used would mean nothing without excited, enthusiastic, and engaged students. The Lion Queens, like the rest of us, were dealing with many personal challenges at the time of this VHIE—the cancellation of a highly anticipated trip being one of them. They could have chosen to disengage or not participate in the activities planned, but instead they thrived. The atmosphere of the experience was full of a passion for learning, community, active reflection and growth.

When talking about her experience, one student said, “Although I have not physically been to Namibia, I feel that a part of me has definitely experienced the culture. I know that I have more knowledge about Namibia than I thought I would, and I would do it all over again. I think VHIEs would ben-

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efit so many students who wish to go abroad but cannot for whatever circumstance. Not only did we hear from and gain insight and knowledge from many people who are familiar with Namibia, but we created a community of people within our program as well. This has been engaging, interesting, inspiring, and so much more.”

This student enthusiasm and deep reflection occurred with every activity.

Students felt the GooseChase “Pride Divide” competition provided small-group engagement and a healthy competition to the VHIE. Not only did the game challenge skills and test knowledge, it fostered growth, and provided another opportunity for communication, with a student stating, “This [activity] included team building, communication and creativity. What more could you ask for?”

Communication continued uniquely during documentary viewing. Students, of their own volition, used the Zoom chat box to create interpersonal dialogue and analyze the film. Students digested the films’ heavy concepts through communication with their peers. This authentically fostered community dialogue resulted in engaged and thoughtful film-viewing in a style that the Lion Queens enjoyed. A student said, “I loved the commentary from watching [the film] as a group.”

The students responded positively to the 360-video footage and headset. One student said the experience was more realistic than traditional video in stating, “Namibia came to

life when I got to view it through the videos.”

Student reflections involving thoughts and feelings on COVID-19 as a topic lessened through the duration of the program. Students instead focused reflection statements and activities on opportunities within the experience itself. The Lion Queens articulated positive responses to guest speakers, discussions, knowledge learned, and personal relationships developed through the VHIE.

When asked about the program, a student said, “Zoom won’t ever be Namibia, but I can confidently say this is still a once in a lifetime experience. It was engaging, uplifting, challenging, and life changing.”

We as educators want nothing more than the success of our students and to watch them thrive in challenging environments.

The spring of 2020 was a uniquely difficult time for our students, and for so many educators, however, this VHIE served as a new and unique way to cope and thrive within the unusual circumstances. This experience may serve as a model for future programs in engaging students virtually, enhancing global learning, and providing international exposure without travel. More importantly, it is a prime example of student resiliency, coupled with educator passion and persistence to create a deep and meaningful learning opportunity.

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Uniting As Warriors Against Hunger: Finding a Place For Poetry

by Melanie Miller Foster with
Hiram Larew, Carson Letot and
Daniel Foster

We've all been there: seated at a round table in a generic hotel ballroom, surrounded by people wearing dress clothes in a variety of dark colors, chatting with others until the meeting proceedings begin. All of a sudden a person steps to the microphone and recites a poem. The room goes silent as every individual thinks about the real life implications of their work.

This was the scene of a meeting of the Association for International Agriculture and Rural Development professionals in Washington, D.C. several years ago. The poet was Aaron R and his presence that day was facilitated by Hiram Larew, retired from the U.S. Department of Agriculture and founder of the *Poetry x Hunger* initiative. Every single person in that ballroom was concerned about the issue of food security in the world and in fact, had dedicated their careers to solving this issue. The hunger-focused poem recited by Aaron R was an effective way of reminding everyone in the room of the seriousness of our purpose.

I remember talking with Hiram during the course of that conference. "Poetry?" I asked. "I love the idea of bringing the arts into the conversation, but I don't know anything about poetry." How does poetry fit with agriculture? There were so many questions, but I knew that working with Hiram

and *Poetry x Hunger* we would find a way to bring poetry to educators through the activities of the Global Teach Ag Network.

Food security, like many other unjust and intractable global issues, is filled with emotion. As we are well aware, some of our students suffer from food insecurity themselves, while others have a sense of guilt at living in an environment of plenty. Others struggle with the notion of feeling like one insignificant individual with the disposition to fight back but is snowed under by the weight of how massive the problem of food security is on the global scale. How do we fight this whirlwind of human feelings on the topic of food security? The answer is simple: with the mighty pen and the art of poetry.

The Global Teach Ag Network created a new program called GLAGcreates, associated with the annual professional learning conference called Global Learning in Agriculture. The program is focused on the integration of the arts, such as poetry, into the conversation around food security. Working with Hiram and *Poetry x Hunger*, a wonderful Action Team of educators volunteered to take on the task of developing online modules combining the topic of food security and a step-by-step guide to get started on writing a poem. An annual poetry contest was established, and the winners of the first contest were celebrated at the annual Global Learning in Agriculture (GLAG) Conference.

There were two GLAGcreates poetry-dedicated activities during GLAG21. The first was a Poetry Café, modeled after the idea of a coffee house poetry slam. I bought myself a beret to help myself get into the proper mindset for this unique evening. We played smooth jazz as participants entered the room, and started the evening by celebrating the young poets who had taken the top prizes in the poetry contest including youth from Honduras, Malawi and the U.S. During the open mic portion of the night poets from across the world shared their poetry on hunger. Some had been written recently, others had been written and celebrated in prestigious poetry outlets. My favorite was an award winning poem written by Brian Donnell James called "Testimony," which brings tears to my eyes every time I hear it. (You can find Brian's poem and many others on the *Poetry x Hunger* website.)

That night in the virtual setting of the Zoom room, educators were inspired. Inspired to take action on food security, inspired to try poetry with youth in their programs, and some were even inspired to try their hand at poetry themselves. The GLAGcreates team virtually high-fived behind the scenes, celebrating the record number of attendance at any GLAG live event to date. It seemed there was a hunger for creative outlets like poetry.

The virtual conference space buzzed with excitement about poetry. A participant, Todd Eick of New York, started a poem in a discussion forum, with each attendee adding just one more word onto the group poem. One participant posted in the community forum: "So happy I joined the Poetry

Cafe tonight - a wonderful reminder of how art very much belongs in and inspires the conversation for solving our greatest hunger challenges.”

The GLAGcreates Action Team also hosted a poetry workshop focused on “demystifying poetry” for educators of all stripes. During the session, science and math teachers shared their experiences with teaching poetry during the pandemic, encouraging educators to use food security poetry as a point of collaboration for educators from other disciplines. Our resident English/Language Arts teacher, Theresa Lewis, shared her wisdom on poetry and teaching poetry. She explained poetry in such a way that helped me to understand why it is so powerful:

“Poetry engages two things in us that make us human and have the potential to connect us to other people: our senses and our emotions. Poets of all ages can use those gifts of our humanity to unite us as warriors against hunger.” Theresa also

shared why she thinks poetry is an important tool when used as a call to action: “Providing students information on food scarcity is the easy part. Knowing what we know isn’t enough to prompt change.”

We invite you to prompt change through poetry with all of your students. All educators are welcome to use the GLAGcreates online modules with learners in formal, non-formal and even informal settings. This is a great opportunity to walk down the hall of your institution and talk to the English/Language Arts teacher. No one discipline is going to solve food insecurity alone, so we must model good collaboration for our learners.

If you are interested in showcasing your learners’ work, consider entering the GLAGcreates poetry competition, which has a deadline of December 1,

2021. Then grab your best coffee house attire and join us for future GLAGcreates events as part of the annual GLAG Conference. Register for GLAG22 at <https://tinyurl.com/GLAG22>.

This poem was composed during the GLAG21 Conference on the suggestion of Todd Eick. Built by 29 GLAG21 attendees, it reflects the Conference’s interest in poetry and other creative arts as tools for engaging agricultural and other learners.

Our Word Life

Rumbling voices echo the hello
for all voices beckon beyond the Great Unknown
We starve for connection to humanity
Scarcity of food be the Change that is our Word-Life!!
Personify your passion
Open your actions
Reach for change
Demand intentional traction
Tomorrow we develop food scientists --
Better our bowls
Engage our hands together for the design
Embraced across a planet



Melanie Miller Foster is a faculty member in international agriculture at Penn State University. She is a co-founder of the Global Teach Ag Network. She can be reached at melanie@psu.edu.

Hunger

Hunger, the one that makes no distinction
Regardless of language, age, or color
The feeling that eats our guts
without compassion
For many, it's the reason for their pain
The cruelest dream is that of those
who sleep to forget
Let his stomach roar, like an enraged lion
And in tears it's their turn to vent,
the suffering of feeling a destroyed
stomach.

The little flash of light in a day
full of darkness
it is that sweet heart, who shares
some bread;
the one who tries to understand that need
and the hungry soul tries to appease.

Do you really think this should be
taken lightly?
Ignore the person who in desperation agony?
Clean, nutritious and
safe food,
it's not an option, it's a right.

Let people in distress be cared for
And that it is not only a promise,
but a fact.
Rise, giants who sleep when they see the need.
May the lack of understanding and
cruelty be over now.
May the sobs of this town be taken care of
God intervenes for an arrangement.

So let's be consenting and help as
much as we can on this earth,
and together against hunger, let's
win this war.

This is a submission to the GLAGcreates poetry
contest from a youth participant, Heyssel, from
Honduras (originally written in Spanish)

Rising From the Rubble

by Regina Smart

Westlake, Louisiana is a small town located in Calcasieu Parish in the Southwestern corner of the state. We have the best of Cajun culture with a Southeast Texas influence. Since the city is surrounded by industry, agriculture is not at the forefront of the Westlake community.

I came to Westlake High School in the fall of 2019 to become the agriscience teacher of a young, three-year-old program. With twenty-four years of experience, I was excited for the opportunity to grow my dream program. My vision is that of a program of an urban nature that would be focused on horticulture and agribusiness, a program that would teach traditional agriculture but practice it in an urban/non-traditional setting.

The fall of 2019 was a challenge: no facilities, a group of mostly uninterested students, and a school that did not really understand what agricultural education and the FFA has to offer. This was more difficult than I imagined. FFA members for the first time participated in Leadership and Career Development Events. In all, we earned two area banners and a 3rd place State banner in Geaux Teach Ag (a Louisiana competition promoting agricultural education). I was excited to see the accomplishments of my students in such a short amount of time. Then on March 13, 2020, we were told we would go home due to a flu-like virus that was going around. I expected to be

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out for a week. *Little did I know that I wouldn't see my students again for the rest of the 2019-2020 school year.*

On Friday August 21, 2020 I had my room ready to greet students on the following Monday. I was excited to be back in the classroom with my students. I would not see those students until November 4th. Hurricanes are a regular occurrence for us in South Louisiana. We are often known to have “hurricane parties,” but Laura commanded our attention. I evacuated thinking I would avoid a few days with no power. The storm made landfall on August 27th and destroyed our area. The devastation was extensive, and our corner of the state looked like a war zone. No power, loss of water in some areas, and the extensive piles of debris made returning home a hazard. Just as we began to clean up, six weeks later, Hurricane Delta hit in the same area. Even now as I am writing this months later, we have yet to recover. There are no words for the devastation experienced by two major hurricanes during a global pandemic: homes gone—literally gone—businesses leveled, families who lost EVERYTHING. In the small city of Westlake, every public building was damaged in some way and many homes were left unlivable. All we could do was rise from the rubble and begin the task of rebuilding.

On November 4, 2020, we returned to schools that to this day still have damage, plywood covering windows, classrooms in disarray with things missing or stolen. We scrambled to begin school with as much normalcy as possible. I wanted to find a way to engage my students in agricultural-related projects, but we had very little to work with. An agriculture teacher



friend in Indiana mentioned the Growing Beyond Earth Program, and we were fortunate to become involved with this wonderful plant science/research-based project. Growing Beyond Earth is a partnership between Fairchild Botanical Gardens and the Kennedy Space Center in Florida. What began five years ago as a program cooperating with schools in the areas that surrounded Miami, Florida, has expanded to reach across the country, even reaching into Canada and Puerto Rico. The program uses data collected from numerous schools conducting experiments following specific protocols designed by NASA scientists. The trials Westlake participated in were a pepper pollination study and a fertilizer trial on NASA selected plants using a replica of the “Veggie” chamber used on the International Space Station.

I will admit it is difficult to get students excited about science projects, but I was determined to find a way to generate enthusiasm and excitement for this program. So how do you generate excitement about gathering data about plants for NASA? You adopt an alien that invades your program! With all that has happened, I still needed to not only promote my program, but also to educate the students, our school, and the community about Agricultural Education. The NASA aspect of the project



inspired me to create a character and story that could be interjected into our program.

Maurice is an alien who became interested in agriculture when he was making crop circles in Kansas. The aliens watch Earth closely and especially the NASA program. The Growing Beyond Earth program caught his attention; that is what led him to Westlake. He watched from the shadows as I taught agriculture to my students and wanted to learn more. He was so excited that he revealed himself to me. This resulted in him being expelled from the space program, so I adopted him. Maurice is currently enrolled as a freshman at Westlake High School. The school has embraced Maurice and his presence has proved a wonderful way, not only to promote agricultural education and knowledge about the FFA, but also diversity and inclusion. I figured there was no better way to showcase our program than through the experiences of an alien with a genuine interest in agriculture. Maurice has participated in two community service projects, shares his ex-

periences in the garden, and shares updates on what is happening in the classroom. He will also earn his Greenhand Degree this year. Maurice shares his experiences through social media, and we plan to work on filming a Docu-Series that shares his backstory.

In February, prior to National FFA Week, we participated in a Zoom call with the National FFA Central Region Vice President, Paxton Dahmer. During this call Dahmer encouraged students to think about community service, and we broke off to discuss possible projects. It was during this time that my students brainstormed ideas. At first their ideas were lofty, things that as teenagers they had no control over. I asked them to think about their own needs, the needs of their neighbors. Next thing I knew, we were discussing the mountains of debris still on the sides of roads in our area and how many times people have had to patch or replace tires after being punctured by nails and other objects. We developed a plan to magnet-sweep residential streets within the community. We started around the high school and now we are offering to sweep yards. We are still working on this project.

Since February I have been able to speak to the Westlake City Council and the local Rotary Club. They have never heard of agricultural education and did not know about the program at the high school. I presented the idea for my students to participate in service-learning projects in which we could clean up and revitalize the landscape of elderly and disabled within the community. We will also work with the Rotary Club to start a community garden. My students worked hard and participated in

the FFA Career Development Events in the areas of Poultry Evaluation, Nursery Landscape and Floriculture. Our Floriculture team placed 3rd in our Area and 5th in the State. Some may not see 3rd in Area or 5th in State as a huge accomplishment but I see it as one of the greatest achievements of my career. My students—some displaced, some living in a camper in the driveway of their damaged home, some dealing with the loss of loved ones during a global pandemic—rose from the wreckage and not only achieved a goal but also reached out to make a difference where they could.

I may not have won many competitions this year or conducted all the activities needed for a National Chapter Award, but I am witnessing the young people in my program develop a heart of service and that to me is more valuable than any banner I may hang on my wall. I am proud of my students; I am proud of our community as we rise from the rubble.



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Looking Beyond Canned Food Drives: How Collaboration and Innovation Can Engage Youth In Addressing Food Insecurity and Healthy Living Within Your Community

by Kameron S. Rinehart, Dr. Jera Niewoehner-Green and Dr. Amanda Bowling

Have you ever wondered how you can engage youth in addressing critical issues such as food insecurity and healthy living outside of a typical canned food drive? The opportunities are endless. Through this article, we hope to spark your interest in taking the next step to engage students in addressing these critical issues that our communities face around the country and world.

For agricultural educators, one goal both inside and outside of the classroom is to make a positive difference in the lives of students through instruction, service, leadership development and mentoring. Collaborating with other organizations within your community, opens new opportunities to expand those efforts to positively influence your students. Through the lense of Ohio youth development organizations and program leaders, our research has given us a glimpse of the impact that collaboration and innovation can have on youth. Their programming supports youth in addressing critical issues such as food insecurity and healthy living in their communities.

There is a recognized need for families to have access to food and remain food secure. Still,

many are experiencing food insecurity in both rural and urban communities across the world. Globally, food insecurity is a complex and challenging problem, where approximately 16 percent of the world's population suffer from chronic hunger (McCarthy et al., 2018). Access, loss of income, and transportation are just a few of the many factors that may cause a family to become food insecure (Cohen & Garrett, 2010). A decline in healthy lifestyle can also accompany food insecure families, thus impacting the wellbeing of youth (Martinez & Kawam, 2014). Youth development program leaders across Ohio have been creatively engaging youth participants in programs that allow them to recognize these types of critical social issues. Youth participants are involved in many different hands-on experiences through which they learn about what is facing their communities. Further, these program leaders are aware that some of these youth may be food insecure themselves thus design their programs to be educational and empower youth to be agents of change.

Let's take a step beyond the original canned food drive. Although a canned food drive is an important way to collect non-perishable items for a local organization or food pantry, there are additional opportunities that will lead to student growth and engagement in community programs including community gardens, farm tours, and nutrition and healthy living programming. Some teachers might be questioning if they would have time to generate brand new programs when they are already stretched so thin. However, that is not our solution. A more

sustainable way to create this type of programming is to partner with other organizations that are already doing this critical work. Local extension offices, Boy and Girl Scouts, Master Gardener Clubs, Lions Clubs, and community-based organizations are all potential partners that could play a key role in your students becoming engaged in supporting healthy living and reducing food insecurity.

One organization, which serves as a learning extension center for the Columbus City School system, is partnering with many local and state organizations to provide the resources they need to be successful in the future. With most of their participants coming from parts of Columbus with high requests for food assistance, the program recognizes the need for families to develop skills needed to modify their lives for the future. They have a long-standing partnership with Local Matters, a non-profit organization that promotes healthy communities through food education, access, and advocacy. Local Matters representatives come in and teach cooking classes each week to program participants. The youth participants learn to cook meals, read recipes and are provided a bag of groceries so that they can prepare meals for their family. This type of collaboration not only allows for students to benefit from new hands-on education opportunities, but also connects the organization to the broader

community.

Innovative classroom instruction can also lead to empower students to make a difference and set forth new ideas to combat food insecurity. For example, what started as seventh graders' frustration that they were not getting to learn about something in which they have interest led agricultural educators to pivot their instruction to meet this demand. The Ridgemont FFA Chapter, in Northeast Ohio is utilizing new innovative technology for vegetable production. The Farm Bot, built entirely by the students, will do everything from cultivating soil to harvesting the crop. Students are learning how to program the robot so that they can completely raise a crop without ever being touched by human hands. The goal is to increase sustainability through automatic watering and a complete hands-off approach by humans. This in return could lead to the next big movement in food production where greenhouses around the world are producing fruits and vegetables autonomously.

The possibilities are endless, and through collaborative efforts, we have heard from Ohio youth development program leaders just how much they have benefitted. Their students and youth participants become engaged, and then they become passionate. One leader said, "A-L-L, all of the programming we do comes from the kids. So yeah, they're invested in it."

One middle school educator who worked in collaboration with this youth development program describes her experience as "I'm

They set out to make a difference in their own communities by asking the tough questions and raising attention to issues that some might overlook.

looking forward to sending [teachers] high school kids... they're going to ask questions; they're going to make demands." Youth can thrive on educational opportunities in which they have input on their education. The youth of today are the leaders of tomorrow. So, take the next opportunity to partner with another organization around you to make a positive difference in your students' lives and prepare them to be engaged citizens by opening their eyes to the critical issues facing our communities today.

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Constructing Keyhole Gardens to Teach Agriscience and Agricultural Literacy

by Nellie Hill, Tom Dormody, Peter Skelton, & Blake Stogner

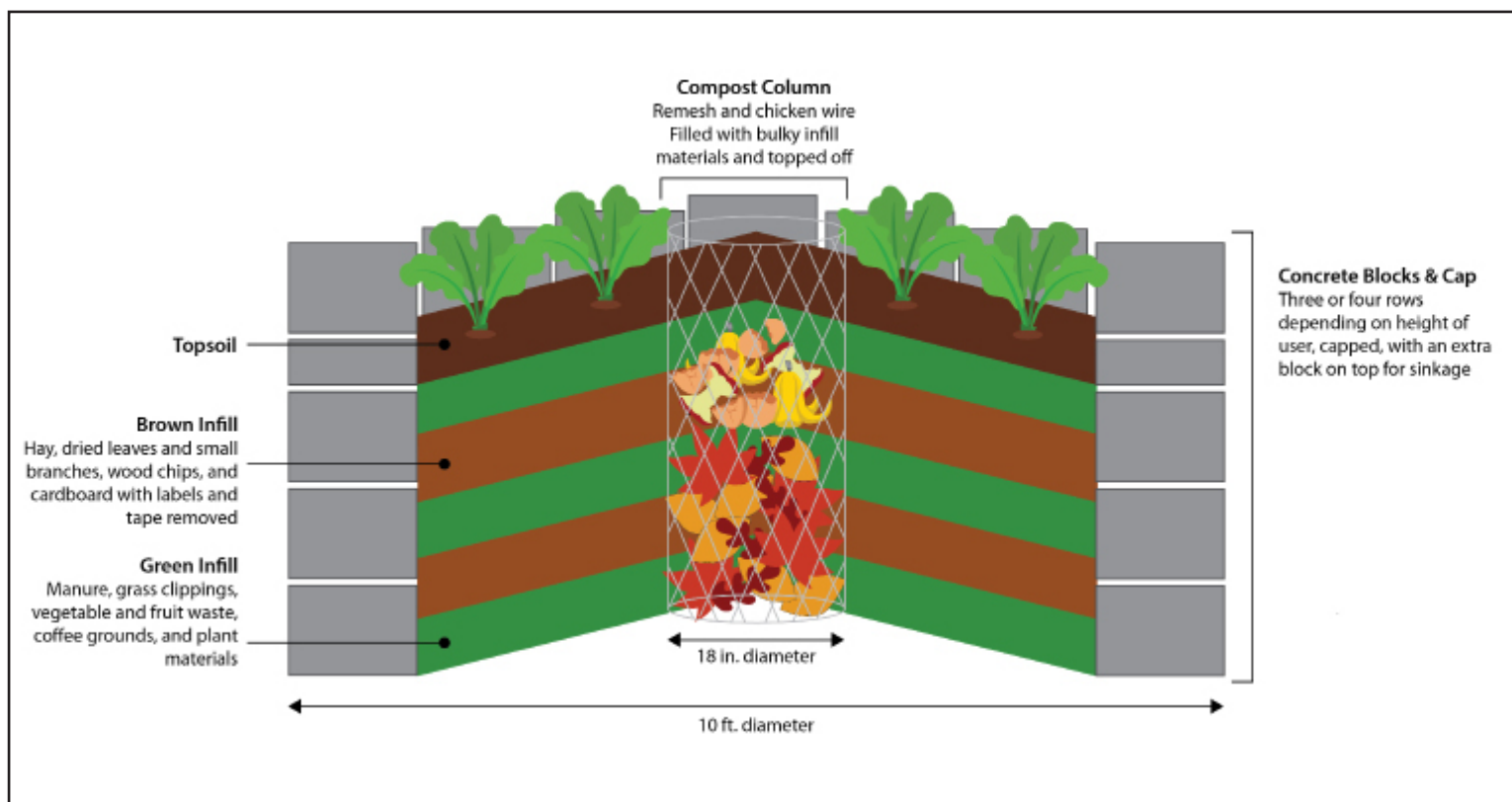
What is a Keyhole Garden? Keyhole gardens originated in Sub-Saharan Africa as a resource-conscious, raised-bed approach to producing vegetables year around. The garden is shaped like an old fashioned keyhole when looking down from above. The keyhole allows access to the garden's composting center. Once constructed, it is filled with alternating layers of organic materials and small amount of topsoil. The topsoil will accelerate bacterial and fungal breakdown of organic materials like weeds, grass clippings, manure, compost, hay, leaves, small stems, wood chips, and cardboard. By regularly watering the composting center, water and nutrients from the decomposing organic matter are carried throughout the garden to support plant growth.

Why Build a Keyhole Garden? Having a small footprint with big possibilities, keyhole gardens offer many advantages to the agriscience classroom experience. The circular structure keeps the class engaged as they circle around, sit on, and get hands-on experience with the structure and its countless combinations of plants and compostable materials. The garden can be used to cover numerous agriscience and agricultural literacy outcomes, including composting, the advantages of organic matter in soils; soil temperature, moisture, and nutrients; water efficiency; and experimentation and measurement. Keyhole gardens are customizable to student needs and interests, design and function, and available physical and monetary resources. For example, they can be designed for enhanced accessibility based on rows of blocks to adjust for height and the size of the perimeter and keyhole for wheel-chair access. The purposes of this article

are to expose secondary agriscience teachers to keyhole gardens and how they can be constructed.

Our Keyhole Garden Design
In Fall 2019, we built two keyhole gardens at an elementary school in Northern New Mexico (Moorman, 2019). Figure 1 depicts a cross section of the keyhole garden we recommend for secondary agriscience programs. Below is our list of recommended construction and infill materials. Sourcing as much of these materials for free is ideal to reduce cost. However, if you choose to purchase materials, one garden will cost about \$175 to \$300.

- One 3.5x7 ft. remesh sheet, each square measures 6x6 in.
- One 64 in. long section of a 36 in. wide roll of 1 in. chicken wire
- 54 or 72 8x8x16 in. concrete blocks (for three or four rows of blocks)
- 18 4x8x16 in. concrete cap blocks



(for a nice smooth top surface)

- Two 28 oz. tubes of heavy duty construction adhesive (i.e., Liquid Nails*)
- One 10 ft. long 2x4 in. board (for leveling)
- About 1.5 cu yd. of green infill material
- About 2.5 cu yd. of brown infill material
- About 1.5 cu yd. of topsoil

At a minimum, you will need these tools to make a keyhole garden:

Water hose and water breaker (e.g., water wand), wheelbarrow, caulking gun, shovel, pitch fork, garden rake, 5-gallon buckets, wire cutters or pliers to cut chicken wire and the steel remesh (smooth any remesh cuts with a file), different sizes of levels, one 3 ft. length of string, two screwdrivers, and work gloves for all students.

If power tools are used to cut and smooth metal or to cut and shape concrete blocks, students in the work area should wear protective eyewear, gloves, and dust masks.

We recommend these steps to build a garden:

1. Identify the center of the keyhole garden. Level a 10 ft. diameter area. Leveling the work site can involve removing or adding soil. A 10 ft. length of 2x4 in. board is helpful for leveling the ground. Drill a hole in the center of the board, secure it to the center of the garden location with a stake or tool and spin it in circles to level the site.
2. Tie a screwdriver to each end of the 3 ft. piece of string. Push one screwdriver into the center and use the other screwdriver to etch into the soil the circumference of the garden.
3. Lay the first layer of concrete blocks. Stay outside of the etched line except for the



keyhole.

4. Add the second layer of concrete blocks straddling the first row blocks and affixing them to the first row with construction



adhesive.

5. Repeat Step 4 for the third and fourth row of blocks, if desired.
6. Because the surface level of the garden will sink over 10 inches as the organic matter decomposes, we recommend one more layer of concrete blocks above the cap blocks

that can be removed later (don't affix with construction adhesive).

7. From the remesh sheet, use wire cutters to cut a 36x64 in. section for the compost column. This will make a round 36 in. tall column with an 18 in. diameter. Bend the cut ends of the remesh to secure the column together. Cover the remesh column with a single layer of 1 in. chicken wire. Bend and clip the wire as needed to secure it to the remesh column.
8. Place the column inside the garden at the head of the keyhole. Fill the compost column with bulky infill material such as leaves or hay.
9. Fill the keyhole garden with alternating layers of green infill materials, brown infill materials and topsoil. We recommend a 3 to 1 ratio of brown to green infill materials. The 5-gallon buckets can be used to get this ratio right. Presoak all infill materials or add lots of water to saturate each layer as they are being added. See Photo 5 for how our completed gardens looked. Because we made our gardens for





elementary students, we planned to end up with just two layers of concrete blocks and a layer of cap blocks after decomposition.

10. The keyhole garden can be planted immediately if the top layer is made up of 8 to 12 in. of well-draining topsoil and compost. Organic materials underneath this layer will continue to decompose without impeding plant growth. Photo 6 depicts the Three Sisters of Native American lore (corn, squash, and beans) growing in our gardens eight months after construction.
11. A post hole digger can be used to turn the compost in the column and to remove finished compost from the bottom of the column to put on the garden.

Some things we learned from our experiences are:

- Locate the garden so it receives half to a full day of sun depending on plant selection.
- A level construction site is essential for facilitating construction and growing.
- You can extend the growing season by building a poly covering for the garden.
- You can design a compost column access door at the bottom head of the keyhole by leaving an opening in the blocks that corresponds to an opening in the wire column. This allows the class to remove finished compost from the bottom of the column to put on the garden.
- The garden can be put on a drip irrigation system with a timer to keep it watered during weekends and long breaks.
- Vermiculture and vermicomposting will enhance student learning and the productivity of the garden.
- Secondary teachers and students can also build a keyhole garden at the elementary school as a service project. They could then teach



the elementary teachers how to use the gardens to address agricultural literacy outcomes (Dormody et al., 2020; Spielmaker & Leising, 2013). A service project could also be conducted for adult gardeners in the community.

Through keyhole gardening, students learn about and experience essential agricultural systems functions. They are engaged in small-scale agricultural production and growing fresh and nutritious foods. Construction and in-fill materials that might otherwise be destined for the landfill are repurposed. The fun students have building and using these unique gardens is a great motivator for learning sustainable concepts.

Lessons Learned

A couple of additional references for constructing a keyhole garden are listed in the bibliography (Taylor, n.d.; Walker, 2012).



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How COVID Prompted Service Learning to Come Alive

by Shyanne Jones and Brandie Disberger

Service learning is an emerging term in agricultural education. Although community service has been a foundation of FFA for centuries, the idea of learning through service has emerged with the addition of service learning as an SAE component. At Kansas State University, we utilize service learning in our agricultural education club to show how it can be facilitated later in their careers as agriculture teachers. This year, the COVID-19 pandemic caused all of us to re-think what we do and why we do it. The Kansas State University Agricultural Education Club took this opportunity to re-tool their community service projects into service-learning experiences. This effort was led by our community service chair, Shyanne Jones who will highlight the service learning based and COVID friendly book drive conducted by the Agricultural Education Club step by step.

Service Committee

Community service is a great way to give back to the community that supports your club or chapter. The K-State Ag Ed Club has a service committee to coordinate these programs, and to evaluate areas of need within the community of Manhattan and Kansas FFA. This semester, we chose a project to increase agricultural literacy in elementary schools within our surrounding area. Ag literacy is declining as
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more generations move away from the farm, and we feel it is important to do our part to help students learn about where their food comes from.

The Beginning

While running for the position of Ag Ed Service Committee Chair, I began to brainstorm service projects to do in our community. With social distancing regulations in place and no-contact being the preferred way of doing, well, everything, this posed a bit of a challenge. Going into classrooms to volunteer with students wasn't an option, and gathering in general wasn't encouraged. Then, I saw a fundraiser on social media that looked interesting: a book drive. One of my friends who is an elementary teacher was asking for book donations for her students to take home and grow their at-home libraries in case they were quarantined and didn't have access to the school's library. It sounded like the perfect project to accommodate social distancing, the books could be taken to schools and dropped off without ever having to be within six feet of other people. Being future Agricultural Educators, we could also ask for donations of agriculturally based books.

The Preparation

The Ag Ed Officer team planned committee meetings for the beginning of February, and I began collecting information about different service projects to put before the service committee. For the book drive, I searched for information on obtaining books. While there are a lot of options on the internet, I didn't find many that would fit the budget of college students once

shipping was included. I also wondered how many donations we would get if everyone had to pick out a book, order it, and have it arrive by the time we closed the fundraiser (speaking as a college student, we're pretty good at procrastinating). At this point I remembered the Kailey's Ag Adventure Book Series, published by Kansas Farm Bureau (KFB). I called KFB to see what the time frame would be on shipping if students were to order these books for the drive. From this phone call I learned that the books are kept in Manhattan, and they would allow Ag Ed Club to pick up the books and eliminate the shipping costs. They also told me about a grant available through Riley County Farm Bureau that would give us the ability to purchase more books, if we ordered collectively.

The Planning

The service committee voted in favor of the book drive, and we began to work out the details. We discussed the options for ordering collectively, and threw around the idea to use Venmo to accept monetary donations. However, we ultimately settled on the website used for collecting Ag Ed Club dues. With the money collected through this website, we would purchase sets of Kailey's Ag Adventure books from Kansas Farm Bureau. We talked about the length of the drive, and decided to open it as soon as the link to donate was available and let it run for two weeks. We set the goal of being about to donate books to all nine elementary schools in USD 383 Manhattan-Ogden.

The Promotion

With a plan in place, we set about spreading the word both within our club and the general public. We put out a flyer with the information when the drive opened, one week before National FFA Week. The flyer contained the address for shipping books in, and the link to donate Kailey's Ag Adventure books. During this time, we also purchased a book to use in promotional pictures, and we tried to create some unique pictures to grab the attention of our followers. My favorite one was taken towards the end of the drive in the welding shop, with students lounging around reading some of the books that had been shipped in. The drive ended on March 2nd, which is National Read Across America Day, which was the perfect way to wrap up collections.

The Finale

At the end of the drive, we had 10 books shipped to us, and with the addition of Riley County Farm Bureaus Grant we raised enough money to purchase 18 sets of the Kailey's Ag Adventure books. This was double our goal, and we set about finding more schools to receive them. Initially we found people who were already traveling to schools around Manhattan, either on their way home, for welding class, or for service learning projects. This found homes for five of the extra nine sets. We then discovered that Ft. Riley has four elementary schools on base, which was perfect. We were also fortunate to be able to go in person to drop the books off, and most schools allowed us to ring the doorbell and pass them off to staff members. Altogether, with eighteen sets of books we delivered to five school districts. In the packets



of books, we included a letter with information about the books and how to contact the K-State Ag Ed Club with any questions about including the books in the classroom.

Future Committee Projects

We look forward to future service projects, whether that be with agricultural literacy or a different need discovered. As we start to evaluate needs, we can look at ways that other organizations serve and see if our community would also benefit from a similar outreach. Many times, common projects can be adapted to the club or chapters' needs. Food drives could become clothing drives for the county foster care system, or a benefit dinner could turn into a firefighter appreciation dinner. Each community has different holes to fill, and each organization has different capabilities to fill those holes. Community service requires creative thinking and adaptability, with a little bit of elbow grease and team effort.

Observations from the Advisors

You may ask, what differentiated this book drive between community service and service learning? The student facilitation, the reflection at each step of the project, the problem solving, and evolving plan were all learning components experienced while the students conducted the service project. The students were

100% in charge of this project and as advisors we answered questions and helped brainstorm solutions when they brought them to us. The students were able to work through problems with the means to collect donations, as well as finding ways to promote the event. Toward the end of the drive the students got to communicate with local schools to work out delivery methods which would work best for their buildings. We applaud the student leadership team of the Kansas State University Agricultural Education Club, led by Shyanne. The project was successful due to thinking outside the box, working within the limits of the pandemic, and for conducting this activity truly as a student led service project.



Shyanne Jones grew up near Mound Valley, Kansas, and attended Colby Community College where she graduated with a Farm and Ranch Management degree. She now studies Agricultural Education at Kansas State University.



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How Can Mastery Learning Elevate Your Classroom?

by Kendra Fuelling & Dr. Sarah E. LaRose

In the ever-changing world of education, it can sometimes be difficult to keep up. At the heart of what we do as teachers is to help students learn and grow, becoming empowered individuals. 21st century public education needs to prepare students for a variety of workplace settings by developing student capacity for growth, collaboration, and skill development. If we never provide students opportunities to develop these skills, they won't be prepared for this end goal. As Agriculture teachers, we have many tools in our toolbox of strategies to help students work toward this goal. Another tool we can incorporate across our programming is mastery learning.

What is Mastery Learning?

Think about a time when you felt you learned something quickly and were able to retain that information. Chances are, this experience involved being intrinsically motivated and interested in the topic, and mistakes were welcomed. Students also learn best in this environment. Mastery learning allows for mistakes, and rather than simply trying to correct the mistake for the future, the students begin to learn from their decisions (Tucker, 2013). When students can explore topics with pure interest, they are often able to dive deeper into the topic and retain more of the information. As a society, we have often confused education with memorization and turned classroom learning

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into something that students may soon try to forget. Mastery learning can help reorganize education in a way that will benefit students' long-term understanding of topics.

Mastery learning is a way of teaching that allows all students to continually work on their level of comprehension until it reaches a level of satisfaction to the educator. For example, you could implement mastery learning in a laboratory setting within a reproduction unit where students repeat dissections until they are able to identify gross anatomy of the specimen. Oftentimes in a teacher-centered classroom, the content is taught, and then students regurgitate information covered during a single class period. Cultivating a student-centered classroom will provide students the environment in which to grow and become more intrinsically motivated (Kaplan, 2019). A classroom that nourishes self-growth and a desire for learning introduces a sense of wonder and creativity into education that many students lose as they progress through levels of education. While mastery learning does require more time, it is also a far more useful tool in creating learning that is more meaningful and long-lasting.

How do I Implement Mastery Learning?

It is important to be realistic when approaching mastery learning because educators cannot adopt everything. Mastery learning may sound idealistic, but there are practical considerations such as time and flexibility allowed within the school. If a lab is being conducted that requires a safety understanding, students will need to have 100% mastery of the safety skills and protocol before attending the lab. It is also unreasonable to expect

the unit to be extended until every student can master every skill. Due to these potential setbacks, we will discuss some realistic ways in which to incorporate mastery learning into the classroom with specific examples below in order to provide ideas.

One way to extend time outside of the classroom in assignments that are not skill-based would be to incorporate some aspects of digital learning. Online learning provides a way for students to learn at their own pace and can even include online game-based approaches (Yang, 2017). Resources such as Quizlet can be used to create a study set for students to use where you can track their progress or online resources such as Farmers 2050 (<https://www.farmers2050.com/school-edition/>) where students can learn through a farming game. Teachers could then use completion of games, or a worksheet paired with the games to ensure students completed these on their own time as a form of mastery learning. Another example would be to utilize the badge system through AET for FFA and SAE activities. This could be carried over into the summer with SAE, continuing to foster the drive to continue learning outside of the school year.

Agriculture classrooms are generally activity- and skills-based, making mastery learning more easily adopted. Mastery learning is easily illustrated in welding instruction. If a student presents a poor weld, then they are asked to repeat the assignment until they have demonstrated competency in that skill. This could be applied to other types of

hands-on activities including engines or project-based introductory courses. These connect to the School-Based Agricultural Education model with the inclusion of FFA and SAE in the classroom. Oftentimes SAE and FFA activities are already student-centered, which means mastery learning is easily incorporated. Using grading in terms of understanding of the agricultural experience or FFA CDEs and LDEs could also be a possible connection to mastery learning.

What's Next?

Implementing a creative and engaging program does not guarantee that the students or community will accept the change. While change can be difficult, starting small can result in big rewards. You know what is best for your students; mastery learning can provide an avenue for students to build their confidence by learning from mistakes. Mastery learning can bridge the gap in learning for some students who have struggled to gain a true understanding. Where will you begin to better empower your students and deepen their learning?

Helpful Resources:

- How to Bring 'Mastery Learning' to the Classroom (<https://www.edsurge.com/news/2019-07-30-how-to-bring-mastery-learning-to-the-classroom>): More suggestions on practical implementation tips for using mastery learning.
- De-Grade Your Classroom and Create Mastery Learning with Narrative Feedback Webinar (<http://www.ascd.org/professional-development/webinars/mark-barnes-webinar.aspx>): Free archived webinar from the ASCD on how to create a more student-centered classroom.

- Chart Students' Growth with Digital Badges (<https://www.iste.org/explore/In-the-classroom/Chart-students>): More comprehensive overview of digital badges and how they can be used in education.

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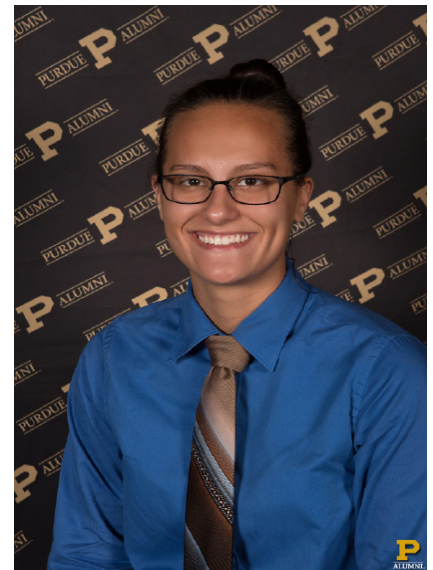
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The Liberal Art of Agricultural Education

by Sarah Cramer

I generally do not address the term “wicked problem,” nor do I share a visual representation of the concept, until about halfway through each semester of FOOD 101: Introduction to Food Studies. FOOD 101 is a class I developed at Stetson University, and it provides an introductory overview of our food system and its many challenges. Additionally, it serves as the first required course of the university’s new (as of Fall 2018) interdisciplinary minor in sustainable food systems. This past semester, when we had arrived at the point of unveiling “wicked problems” as a conceptual framework, a particularly vocal student nearly jumped out of her seat and exclaimed “so now I have the words for how this class makes me feel!” By this, she meant that all semester she and other students had begged for clear solutions to the questions and problems they had encountered, and they were growing increasingly frustrated by my unwillingness to give them any.

In this article I reflect upon the role of the liberal arts university in addressing wicked problems in our food system, and share my own experiences translating my land-grant graduate school experience to a private, liberal arts context. I discuss pedagogical tools that have helped me utilize the wicked problem framing in my classroom, as well as challenges and opportunities for agricultural education at the liberal arts university.

Background and context

The First Morrill Act of 1862 and the subsequent establishment of land-grant universities was in many ways a response to the dominance of the liberal arts and sciences in higher education. These institutions and their “classical” curricula were seen as inaccessible to the rural majority. The original purpose of the land-grant was to provide an education that was both liberal and practical. Over time, though, critics have argued that the structure of the land-grant college of agriculture and the specialization of agriculture as an academic discipline may have inadvertently prevented other students from being exposed to farming or learning about the food system (LaCharite, 2016).

Presently, less than 2% of the population is involved in agriculture, and most residents of the United States live in cities. The number of farms continues to decline (down 3% from 2012 to 2017) while the average age of farm producers has risen to 57.5 (USDA, 2019). These domestic trends intersect with global concerns about climate change, food insecurity, population growth, and biodiversity. It is within this incredibly complex and challenging context that I, and others, see an opportunity for reimagining the purpose of both agricultural and liberal educations.

Agriculture as a liberal art

In her comprehensive survey of campus agriculture projects, Kerri LaCharite studied 353 separate agriculture projects at 302 colleges and universities, the majority of which were not land-grant institutions. Projects were diverse in size, structure, and focus, and ranged from small campus gardens of less than half an acre to 1,000+ acre campus farms. Some projects were student-run and extracurricular, while others were fully staffed and integrated into the institution. From an academic perspective, projects spanned a spectrum from offering no relevant courses to offering undergraduate certificates, minors, majors, and graduate degrees.

To this list of 353 projects, I can now add one more – the sustainable food systems program at Stetson University. Stetson is a private, liberal arts school in DeLand, Florida, with an



undergraduate enrollment of roughly 3,000 students. I joined the Stetson faculty in the fall of 2018, and my primary task upon arrival was to continue the momentum that had led to the creation of my position, and help build the new sustainable food systems program. The program, currently approved as an academic minor with the goal of expanding to a major, is in many ways a formalized response to years of student, faculty, and staff activism around food and sustainability. Though an official agricultural curriculum did not exist until 2018, a flourishing campus garden and student beekeeping club had been established years before by students, and it was Stetson students who founded DeLand's only farmers market. Staff in Dining Services initiated numerous sustainable food sourcing policies and educational projects, and faculty from varied disciplines including communication, mathematics, geography, English, and chemistry developed courses with agricultural themes. This campus-wide, multi-faceted approach to food systems education, which at Stetson evolved quite organically, is consistent with the conclusions



Peggy Barlett (2011) draws from her research into predominately liberal arts campus food projects. She frames successful campus food projects as having four components – purchasing goals, academic programs, direct marketing, and experiential learning. Though Barlett does not invoke an explicit “wicked problems” framework, her recommendations map nicely onto the suggestions of other scholars who do, such as Hamm in his “Principles for Framing a Healthy Food System” (2009). I have found both of these articles enormously helpful in my work, and I assign them to students as well. I believe that the critical, interdisciplinary nature of a liberal education, when employed effectively, must require students to engage with wicked problems. It may be frustrating to students who want simple answers, but to tell them that those simple answers even exist would do a disservice to us all.

In many ways, my own personal journey has been a reflection of the themes I have explored in this article. I come from a long line of Missouri farmers, but my grandfather actually left the farm to spend his career as a professor at our land-grant, the University of Missouri. Though agriculture remained an important part of my extended family's work, and our collective identity, I never considered formally studying it in college. I attended a liberal arts university to study biology, but found the greatest rewards in maintaining a garden, and teaching myself food preservation techniques and beekeeping. I find it amusing to look back on this time and

Their knowledge and lived experiences matter, too, so we bring those into the classroom in an intentional way.

ponder the roundabout path that brought me to agricultural education – a discipline I did not engage with until enrolling in a Ph.D. program. Now that I am back at a liberal arts institution, I am grateful for the diversity of experiences I have collected. When you are forced to look at problems from a variety of disciplinary lenses (biology in college, public health for my master's degree, and finally agricultural education), it is impossible to believe you have all the answers or that a unified solution exists. This acceptance of complexity colors all of my work, and is a mindset I hope to cultivate in my students.

Pedagogical tools

- **Democratic classroom.** An overarching approach that I apply to certain courses is that of the “democratic classroom.” I see this classroom philosophy as modeling a return to the original emphasis on civic engagement in the early land-grant mission. In practice, this means that students and I write course objectives together on the first day of class, and develop shared expectations for the semester. Pairs of students are also responsible for teaching a day of class, and throughout the semester all students are required to

contribute “crowd-sourced” readings to our Blackboard site. As I tell students on that first day of class (when we read the Hamm article), if I personally held the knowledge necessary to address the challenges in our food system, I would already be doing it!

- Community partnerships. Because Stetson’s production space is currently limited to our small campus garden, other faculty members and I must

We are preparing our students for a future full of uncertainties and increasingly wicked problems, but one constant will be the need to feed ourselves.

be creative in order to offer students experiential, agricultural learning opportunities. Naturally, we partner closely with the University of Florida/IFAS Extension, which has a robust presence in our county. Extension professionals mentor Stetson student internships, provide guest lectures, and open their research sites for student and faculty collaboration. We also facilitate community-engaged learning opportunities with local farmers, food systems businesses, and non-profits. In addition to providing the experiential learning for which we all advocate, these community-integrated approaches further advance Hamm’s principles (2009).

- Essay-style exams. One example of an assignment that embraces

the “wicked problem” approach to agricultural education is the essay-style exam I use in FOOD 101. Students choose 3 of 5 prompts to respond to, and each requires that they use content from the course to solve a series of real-life food system challenges. There are no “right answers” (which of course aggravates some students), but the responses are evaluated based on the strength of the student’s argument and appropriate use of evidence. These prompts help push students to higher levels of Bloom’s taxonomy, while also reiterating yet again the complexities of our wickedly problematic food system.

Conclusion

The country, world, and landscape of higher education look very different today than they did in Justin Morrill’s time.

We cannot promise students clear, simple answers, but we can equip them with some of the tools necessary to start chipping away at the problems. Some pieces of the solutions may be held by the land-grant institution, others by the liberal arts school, and others in yet untapped reservoirs of knowledge elsewhere. The great comfort in finding answers through the “wicked problem” framework is that it necessitates shared responsibility and diverse input – this gives me hope for the future and I hope my students feel the same.

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Tragedy of the Commons: Using a Classroom Activity to Teach Students About Complex Natural Resource Systems

by Amariah Fischer,
Micah Cameron-Harp, Jordan
Morrow

As a geographer, an agricultural economist, and a mechanical engineer, we are by no means seasoned agricultural educators. However, as researchers in the Food-Energy-Water nexus and as instructors of undergraduate courses focused on sustainability and contemporary environmental issues, we certainly understand the importance of teaching students, of all ages, the value of natural resources. Often when we are teaching our students about key issues in agriculture, environment, and sustainability, we struggle to find activities that move students beyond a surface level understanding and require them to deeply engage in the material and how it relates to other concepts we've discussed in class. The topic of

natural resources is no exception to this challenge. While we know students must understand the complexity of harvesting, using, and allocating these resources to be effective in their future careers in agriculture and other fields related to the Food-Energy-Water nexus, providing tangible learning experiences mimicking the dynamics of a supply of fish in a body of water or a groundwater aquifer can be difficult in a classroom environment. In this article, we present an engaging classroom activity that bridges the gap between the theory of the Tragedy of the Commons and the real world challenge of sustaining shared, limited natural resources our students will face.

THE CONCEPT

The concept of the Tragedy of the Commons was first introduced by William Foster Lloyd in 1833 and later refined by Garrett Har-

din in 1968. The Tragedy of the Commons refers to the situation that occurs when multiple individuals, sharing the same limited resource and acting in their own self-interest, ultimately deplete said resource even when it is in no one's best interest for this to happen. To provide an example of this, Lloyd (1833) described an open pasture where herdsmen bring their cattle to graze. Over time, a herdsman decides to maximize his own personal gain by increasing the number of cattle that he brings to graze in the pasture. As this trend continues and other herdsmen follow suit, the number of cattle grazing in the pasture exceeds the carrying capacity, the maximum number of cattle the pasture can support, and the natural resource is depleted. This concept can also be presented in a fishery or groundwater management context; both are described in the activity below. Regardless of the natural resource used in the activity, students are asked to take on the role of stakeholders harvesting the natural resource. This requires students to actively engage in the activity so that they personally experience both the frustrations and rewards of being one of many individuals sharing a natural resource. Specifically, this activity is associated with the following learning outcomes:

1. Describe the Tragedy of the Commons in their own words.
2. Explain the specific challenges of being a stakeholder harvesting from a shared,



limited resource.

3. Identify potential solutions to the Tragedy of the Commons.
4. Apply the concept of the Tragedy of the commons to another context or natural resource.

THE ACTIVITY

The first step in the classroom activity is depicting the resource context students will operate in. This step provides the narrative and context for the natural resource and each student's relationship to it. During this stage, it is critical for students to understand how their personal resource extraction determines the reward they receive, but the total resource use among all students impacts the depletion of the resource. In the case of a fishery, for example, the moderator asks each student to imagine themselves as the captain of a fishing vessel on an ocean. While every other student fishes on the same ocean as they do, they only receive payment for the fish their vessel brings in. As the students grasp the narrative and place themselves in the shoes of a resource user, they will begin to experience the same pressure to maximize personal gain that produces Hardin's theoretical results. Next, the moderator describes the harvest and replenishment processes in each round of the activity. If the fishery context is used, they would describe how the total catch across all vessels reduces the fish population in the ocean, while reproduction by the remaining fish increases the population. Even if it isn't stated explicitly, the replenishment rule should be easily recognized. For instance, the remaining fish in the fishery all produce one



offspring so the population left after harvest doubles in size.

The last step before starting the activity is to describe how students will be rewarded for their efforts. Students can be rewarded with points for an assignment based on the number of resources they harvest, or they can trade in units of the resource for a reward like candy. As long as the reward is individual in nature, students will have an incentive to extract more than what is best for the group as a whole. At this point, the moderator starts the first round of the activity. In each round, students have a minute to harvest the resource. At the end of each round, the resource replenishes according to the rule described earlier. If the students harvest all of the resources in a single round, the activity ends for them.

We've found the activity requires little in the way of materials with some creativity. We use several plastic bins as the "oceans" for the fishery case, and then we divide the students into groups so there are

around 5 students per basin. Each student is given a spoon to harvest "fish" for which we use pieces of candy. We also do a practice round first so that students can see how the activity runs and start to understand the replenishment process. Usually six or seven rounds is sufficient for students to grasp the core concepts of the activity. If you wanted to do this activity in a groundwater management context, the activity context would put the students as farmers using groundwater to irrigate their crops. By pumping groundwater, each individual lowers the total water table and recharge may occur due to percolation. The students would use straws to pull water out of the container by covering the top of the straw with their finger and moving it to their own container. This is an accurate representation of groundwater irrigation as the water table lowers, the amount of water the straw will pull will decrease. The rest of the activity follows similar to the fishery version.

GET THE MOST OUT OF THE ACTIVITY

In our experience, the first-time students attempt this activity, they try to maximize their own reward without giving much thought to what everyone else is doing and quickly deplete the resource. The typically abrupt end to the activity (a lot of times only one round) gives students a real example of how easily the Tragedy of the Commons can result. Giving the students time to reflect on what they did (individually and as a whole) and on their lack of reward allows them to come up with a better plan for sustaining the resource and maximizing everyone's reward. We recommend going through the activity twice so they get the shock of depleting the resource faster than they thought possible and the joy of successfully sustaining the resource (hopefully).

Engaging in pre- and post-activity assessments or discussions can add value to the activity as well. These assessments can be used as a way to explore how students understand the decision-making processes of stakeholders, how they perceive the relationships between resource use, individual behavior, and group behavior, and how their understandings and perceptions compare from before and after the activity. Further, post-activity discussions allow students to share with the class the challenges they faced during the activity and how their specific group was able to overcome those challenges. Not every group will use the same approach or arrive at an approach the

same way, creating the space for students to share their experience with the exercise provides different perspectives to the rest of the class. Whatever class you are teaching, we hope that you will consider this activity when discussing resource sustainability and the Tragedy of the Commons. We also understand that we described an in-person activity and not everyone is currently in-person. We hope that you keep this activity in mind for when you see your students again, but we also want to offer an online resource that you could look into for a virtual learning activity (<https://economics-games.com/tragedy-commons>).

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The Agricultural Education Magazine

Grow Your Own! An Internship Model to Retain Preservice Agricultural Education Students

by Paul Aarsvold and Amy Smith

“Necessity is the mother of invention.” As the shortage of school-based agricultural educators continues to grow, one group of SBAE teachers found an innovative way to address the issue of recruiting and retaining future educators into the profession. After a full day of professional development at the 2014 National Association of Agricultural Educators, the Minnesota state delegation found themselves discussing the shortage and what they, as SBAE teachers, could do about it. One of the biggest hurdles identified was that the agriculture industry could entice students in post-secondary ag ed programs with internships (and future careers) that involved vehicles, iPads, and other incentives, generally not offered in the education field. As the conversation continued, one idea began to form. What if... agricultural education offered

“[The internship] really gave me an idea of what teachers do in the summer. It was also awesome to see what other programs looked like”
Cloey Anderson, (SDSU Sophomore, 2018 intern), SBAE Teacher at Hills-Beaver Creek

an internship for post-secondary students? With cocktail napkins and a pen, the group began to hammer out the details of this idea. As the group considered the potential internship, more questions arose. *How many weeks would this new “internship” last? How many hours each week? How much could we afford to pay? What salary would make it attractive enough to keep our post-secondary ag ed students pursuing their teaching degree instead of taking an internship with industry?* Back home in Minnesota, conversations continued regarding how to turn this idea into reality. Leveraging the Minnesota Agricultural Education Leadership Council (MAELC) as the starting point, the first task was obtaining funds for the internship, which they did by securing business sponsorships. MAELC is a legislatively funded council that coordinates initiatives to improve and expand agricultural education in the state. Based on funding available and knowledge of teachers’ summer contracts, it was determined that the student interns would spend 32 hours/week for 10 weeks from May-August with a cooperating teacher and be paid \$3,750. The hope was that university students would utilize this experience as encouragement to pursue a teaching degree in agricultural education. Applicants must be Agricultural Education majors or intend to pursue teacher licensure. Preference is given to those who intend to teach in Minnesota. Applicants are expected to be self-

“This internship allowed me to network with other teachers around the state as well as working with high school students on a level outside of the classroom,” Rachel Moe, (SDSU Junior, 2016 Intern), SBAE Teacher at Osakis

motivated, ambitious, possess a strong desire to learn, must work well with youth and adults, be a strong communicator, and have a valid driver’s license and reliable transportation. The students interested in the internship as well as teachers who would like to be “cooperating teachers” submit applications in early November. After the MAELC staff has reviewed the applications and make their selections as to which university students will receive the internship, they then review the teachers who applied to host an intern. Based on personality and the geographical needs of the university students, the MAELC staff places the interns. It is critical to place the potential interns in a situation where they can learn and further develop. During the internship, an internship coordinator makes visits to the sites to visit with both the intern and cooperating teacher to ensure the experience is positive. Throughout the summer, interns are able to see the wide variety of activities that instructors do over the course of a summer.

“This internship has helped me greatly as an agricultural education teacher! I think the most important thing that I learned from this internship is how to build effective relationships when entering a program. My supervising teacher was new to the program at the time of my internship, so getting to tag along with her and see how she built relationships with community members, stakeholders and high school students while starting to put her own twist on the program was largely beneficial as I transitioned into my first year of teaching in my program!” Joe Ramstad, (UM-TC Sophomore, 2017 Intern), SBAE Teacher at Staples-Motley

In the past, some were able to help with CASE workshops, or help put together CDE (Career Development Events) study binders, or even help to develop some curriculum. All interns get to help with officer retreats, SAE (Supervised Agriculture Experience) visits, and fairs. In addition, all interns attend, with registration, and lodging covered, the Minnesota Association of Agricultural Educators (MAAE)

Summer Conference as part of their hours.

As part of the MAAE Summer Conference, interns meet as a group to share a short presentation on something that they have been able to do or something they really enjoyed as part of their internship. This sharing of ideas allows the interns to learn about other summer programs and bring back ideas to their cooperating teachers, and “file” them away for their own programs down the road. Additionally, the interns can network with the other school-based agricultural educators and participate in professional development workshops. As the interns moved from college into the profession, many have stated how valuable being at the MAAE Summer Conference was for them. It played a huge role in solidifying their decision to teach, and they felt that they had an advantage their first year of teaching as they had already made many valuable connections. One adjustment made in Minnesota over the course of the internship is to bring our interns to the schools/chapters earlier in May, thus allowing them to interact with more high school students, help with the banquet planning and witness the transition from school schedule to summer schedule. This year, due to Covid-19, many of the traditional summer activities were not able to be conducted. Fortunately, the Minnesota school-based agricultural educators, have been extremely creative, and our student interns have been some of the beneficiaries. Several interns have had the chance to “present” lessons, help their students one-

“This internship has helped me develop more of a comfortability in the classroom and being able to better prepare leaders for the future of ag and in the community,” Jack Crowson, (UWRF Junior, 2019 Intern), SBAE Teacher at Hayfield

on-one, learn how to weld, and are getting the benefits of students craving education after having to do distance learning from the middle of March through the end of the school year.

You might be saying to yourself – “This sounds good, but does it really work?” Since the summer of 2015, Minnesota has hosted 36 interns, with 83% of our interns who have graduated (19/23) from post-secondary institutions going on to become Minnesota school-based agricultural educators. Members of Minnesota Team Ag Ed view this as a success. While we would love to have funds available to offer more internships, having the ability to place 5 university students to get them acclimated and excited about teaching agriculture in Minnesota is invaluable and an important effort.

We think this is a model that can be replicated, whether this is a state initiative or a local initiative between several schools, the following recommendations are made for those interested: 1) begin with a small planning committee;

2) seek funding from foundations and/or industry supporters; 3) be selective about host teachers and schools; 4) allow flexibility in internship scheduling; 5) enlist an internship coordinator, and 6) have structured reflection opportunities for interns. Per intern, total cost is less than \$4000, which could be adjusted based on internship duration.

As you consider this, think of the valuable experiences an intern would get and how motivating it could be to replicate this in your own state. As Captain D. Michael Abrashoff states in his book, *It's Your Ship*, "We all feel satisfaction in a job well done, but the greatest satisfaction transcends personal achievement – it comes from helping others reach their potential."

As you read the quotes from some of our interns – agricultural education always has been and will continue to be about the relationships formed between the students and instructor. Our program has succeeded because of the relationships that have formed between the interns, high school students, and cooperating teachers. As former Minnesota State FFA Advisor, Joel Larsen used to point out when addressing the SBAE teacher shortage: "Grow your own."

For those seeking more information, check out the "Cultivating the Next Generation of Agricultural Educators" workshop on the 2020 NAAE Convention Platform (<https://www.naae.org/convention2020/index.cfm>).

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Virtual Learning Turns Into Virtual Teaching

by Dr. Andrew J. Baker, Ms. Alicia Flowers, Ms. Daniela McConville

Teaching in a pandemic situation certainly has had its challenges and opportunities to be creative and innovative. However, pre-service training certainly can be even more difficult in planning valuable instructional experiences for our students, since school districts have established limitations on visitors entering their facilities to maintain safe pandemic protocols. Teacher training institutions have had to adjust their normal pre-service training assignments and placements with the understanding that some school districts may limit the access to their students during the pandemic, which have provided valuable instructional experiences in the past for pre-service teacher training.

Since March of 2020, faculty have frantically adjusted their coursework to fit a virtual modularity as institutions shut their doors and sent students home to prevent the spread of the COVID-19 virus. Student teachers were sent back home and were asked to adjust their teaching strategies to a new virtual world of education. Institutions established new protocols that disallowed pre-service teachers from traveling and entering schools to gain vital instructional experiences. Faculty quickly learned about new software and platforms, such as Zoom technology, Google Meets, and Nearpod to integrate these teaching tools into their curriculum. Pre-service teachers also had to adjust from teaching in a face-to-

face modularity to learning how to teach in a virtual world. The fall 2020 semester brought new hope as student teachers were once again allowed back into schools to complete their clinical experience. However, some school districts didn't last long with the face-to-face modularity as the virus quickly spread among the student population and reverted back to remote learning. Schools bounced back and forth between face-to-face and remote formats as the semester progressed. The positive instructional progression of a teacher is a vitally important variable in fulfilling the strong demand for quality teachers in this country. As teacher educators, we must provide those positive, meaningful field experiences to maintain that valuable instructional progression of our students. It is just as important to share our successes and failures with the educational profession to advance pre-service training. Here are just a few stories from pre-service teachers who had to adjust from "virtual learning to virtual teaching."

Daniela McConville; Earlville, IL
The experiences within agriculture classrooms, during 2020, looked much different than we have ever seen before. The traditional hands-on experiences our students enjoyed were not easily replicated via Zoom or Google Meets. The pre-service teachers were presented this challenge during our instructional experience with West Prairie High School during the fall

2020 semester. We asked ourselves several times, "How can we make this more engaging for our students?" We began our clinical experience face-to-face, but quickly had to adapt our instructional units to a remote setting. We all brainstormed and found unique ways to provide the students with engaging and beneficial learning opportunities. I found Nearpod to be a great interactive platform for the students to learn content as well as an assessment tool for the teacher and students. Nearpod helps educators make any lesson interactive whether in the classroom or virtual. The concept is simple. A teacher can create interactive presentations that can contain quizzes, polls, videos, collaborate boards, and more. I used the polls feature at the beginning of the lesson to get to know the students. I asked them their grade level, least favorite pizza, as well as their favorite soft drink. I then continued using the matching, quizzes, and collaboration board features throughout the resume lesson to assess my students on the content being learned. I highlighted the key terms and concepts of resumes and then the students did a matching activity on Nearpod to check their understanding. I also had them collaborate with their peers to develop job descriptions for their resumes. Nearpod might not be as interactive and hands-on as the traditional activities completed in a face-to-face setting. However, it was a great tool to get students engaged during remote learning. I saw much success with this platform during my pre-service instructional experience.

During the Fall 2020 semester, my cohorts and I had the opportunity to teach each other and high school students. It would be our first steps in our student teaching experiences. In my case, I was able to learn from teaching my classmates this semester. In the previous semester, I learned from teaching my classmates in the virtual setting. These experiences prepared me for what was to come in my student teaching experience as I started teaching high school students. I learned that being present in a virtual setting is a good way to keep students interested. It also shows that you are available to provide student assistance. My first experience teaching high school students was fortunately in an in-person setting. However, my second experience was virtually, and I had about a week to prepare for the sudden change. This change impacted what I previously planned for an activity. I planned for the students to work together in groups to act out Consumer and/or Customer Complaints and how they would deal with each situation. This activity would allow students to interact with their peers and move around to show understanding of the subject. I still wanted to do this activity in a virtual setting. As a result, I reached out to other teachers to learn about breakout rooms on Zoom. Placing students in breakout rooms allowed them to socialize with peers, learn, and take a break from lecturing. Once students came back from the breakout rooms, they figured out ways to share what they had come up with. The students did well



with this activity and showed that they successfully learned the content presented. I was also very impressed with the student's creativity and resilience during this new situation. From teaching and past learning experiences, I learned new ways to keep students engaged in this new virtual world.

Alicia Flowers; Bowling Green, MO I am beyond thankful that I am a pre-service teacher going through this pandemic. Looking back on this semester a few key words pop into my head, rewarding, educational, and stimulating. Our pre-service teaching experience at West Prairie High School was one of a kind but I could not be more grateful for this opportunity. My colleagues and I had to jump into a world of unknowns in the Fall 2020 semester. An experience that for years and years had been in person in a matter of 24 hours had to be flipped online. We, pre-service teachers, were experiencing what so many educators had experienced or would end up experiencing, and just

like those educators we had a number of individuals to rely on. While many of my classmates chose to use features, such as Nearpod and Zoom chat for their lesson, I chose to step further out in the untouched territory and use a Google add-on called Slido, an interactive presentation. I created my presentation, tested it myself, and even had my roommate test it, everything worked, but as you can guess when the day came and the lesson was put into action the problems began. Here I am in this uncharted territory, no back up plan in place, problems everywhere, and I am in charge. I, a gold personality person, am panicking, but in a split second I instruct the students who are having trouble to use the chat session of Zoom. The students and I make it through the lesson and I present the assignment and you can only imagine what happens next. In a class period that has already had stimulating challenges arise yet another would arise when the assignment template would not

download properly. Feeling like a failure, I quickly change plans and have the students just type out the information from the template. The feelings that I experienced in this moment are the same feelings that first year teachers, ten year teachers, and far more experienced teachers have experienced during this pandemic. It may seem off that someone would say the pandemic and thankful in the same sentence, but looking back on the Fall 2020 semester I can honestly say that I am thankful that I was able to be a pre-service teacher during the Covid-19 pandemic because I was able to receive some of the most valuable and stimulating education that a pre-service educator ever could. The experiences that this pandemic has brought my colleagues and I could never be taught in the classroom from a textbook, being in the situation, and having to jump into the unknown gave meaning to the content.



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How a Five-Gallon Plastic Bucket became an Agriscience Laboratory Facility also known as “The Bucket Brigade”

by Catherine A. DiBenedetto,
Phil Fravel, Katie Gilson, and
Kaitlin Goforth

Here are some well-known facts about teaching in a school-based agricultural education program. Fact #1: The agriscience curriculum is most effectively taught using experiential learning through hands-on instruction. Fact #2: Agriscience laboratories include barns, greenhouses, mechanics facilities, and outdoor areas such as ponds, streams, landscapes and forests. Fact #3: The agriscience curriculum introduces students to careers in agriculture through exploratory topics. Fact #4: The agriscience curriculum includes many concepts that directly relate to science, technology, engineering and mathematics (STEM). Fact #5: Agricultural educators help prepare students for college and careers. Fact #6: Agricultural educators are constantly challenged to find new, innovative and creative ways to teach their courses using a variety of resources that align with national and state standards. However, what does an Agricultural Educator do when they discover they will be teaching their 9th grade Introduction to Agriscience and Technology course for the entire year to 12 students, using a synchronous virtual learning platform?

Due to the COVID -19 pandemic, students at Pendleton High School in Pendleton, South Carolina were offered the choice to attend their classes virtually during the 2020-2021 academic year. Zoom was used as the remote instructional platform for students to meet for their 75-minute class in the

Introduction to Agriscience and Technology course. Students met each morning Monday through Friday through an electronic link to join their classmates and teacher for their ‘AG class.’ Each day progressed by teaching the typical topics of instruction which included units such as leadership in FFA, developing a Supervised Agricultural Experience (SAE) project, introduction to careers in agriculture, and Parliamentary Procedure. Zoom, Zoom, Zoom! Developing daily lessons for students to actively participate and engage in the agriscience curriculum only in the virtual environment quickly became challenging. The creative minds of a team consisting of a student teacher, a cooperating teacher and two university supervisors resulted in developing “The Bucket Brigade.”

Who ever thought that a five-gallon plastic bucket would become the sole resource for a laboratory in an introductory

agriscience and technology course? The Bucket Brigade can be defined as a mobile laboratory where students enrolled in a virtual learning academy (VLA) were provided with the resources needed to actively participate, in a hands-on manner, by having access to the same materials they would have experienced in their AG class if they were attending school in person. Administrative approval to support the innovative idea was secured and details for safety guidelines were provided. Parental/guardian consent was also collected for each student to participate in the Bucket Brigade.

The Bucket Brigade supplied each student with two pre-assigned five-gallon plastic buckets. One bucket remained at the school and the other was sent home with two weeks of laboratory instructional materials and supplies that aligned STEM concepts to enhance the curricular content being taught in each unit of instruction. Parent or guardians of the students were emailed instructions and a schedule for picking up and



returning the buckets to and from the school. The second bucket remained at the school to rotate materials and supplies for each unit of instruction. The buckets were sequentially numbered (1 through 12) and lettered (A and B). Students were each assigned a number to correspond with their bucket. When bucket 'A' was picked up, bucket 'B' was being prepared for the next set of laboratories. When bucket 'A' was returned, as noted on the instruction guide, some items were returned, and some items were kept by the student. For example, general supplies such as colored pencils, a ruler, construction paper, scissors, etc. were kept as they would be used for other labs. Tools such as a hammer, wire cutters, hot glue gun, floriculture supplies such as wire and floral tape, soil samples, and seed identification kits were returned. A focus on STEM concepts

throughout the curriculum was emphasized by designing laboratory investigations for students to explore that aligned with the objectives in each unit of instruction to expose the students to all of the typical aspects of a face-to-face introductory agriscience course. In the agricultural mechanics unit of instruction students were taught basic measurement skills followed by how to construct a bluebird house. Next, introduction to electricity was taught using wiring boards and wiring toolboxes that contained supplies to wire a circuit. In the plant science unit of instruction, seed germination kits were organized for students to conduct a 'rag doll' test, compare monocot (corn) and dicot (beans) seeds, and identify seeds from 24 agronomic and cultivated vegetable crops. Students learned to apply mathematical concepts when calculating percent germination rates and maintained data related to rate of growth with metric

measurements. Students also recorded ambient and core temperatures twice daily while they were germinating seeds in a 'mini greenhouse' at home on a windowsill. To explore floriculture, artificial flowers were included in the buckets for students to create a floral design, a boutonniere, and practice making a bow after learning about the color wheel and the principles of floral design. In the animal science unit of instruction, students were given materials to construct a three-dimensional skeletal system of a horse and construct the various digestive systems and meat cuts of different livestock breeds. So, what are the facts regarding the Bucket Brigade experience from the cooperating teacher and student teacher?

Excerpt from cooperating teacher (Katie Gilson):

This is my tenth-year teaching and teaching virtually felt like it was year one all over again. This [virtual teaching] required a lot of planning and preparation weeks in advance prior to teaching the unit. When teaching a lab [in person], I didn't have to measure and separate all the materials for the lab, I just had to make sure I had enough material for each group of students. Prepping the buckets to go home changed the way I planned lessons and taught labs. We also created teaching aids for each lab as well as an extra set for my student teacher and I to use with the students. The "Bucket Brigade" project increased the communication and interaction between parents and I since I would call parents if a student was absent for a series of days or I delivered a bucket directly to the student's home when the bucket was not picked up. Parents seemed to support this project since they came to the school to pick-up and rotate



the buckets with the lab kits, too. I felt this made students more engaged in class since they were able to work on something other than work on the computer and look at a PowerPoint. Once the labs started for the class, students participated more by turning in assignments on time more often, participating more in class discussion, having their video feed on, and there was 100% attendance in class once labs started. I think I grew as a teacher after this experience by being able to still teach the curriculum using hands on projects and gaining more confidence in teaching virtually.

Excerpt from student teacher (Kaitlin Goforth):

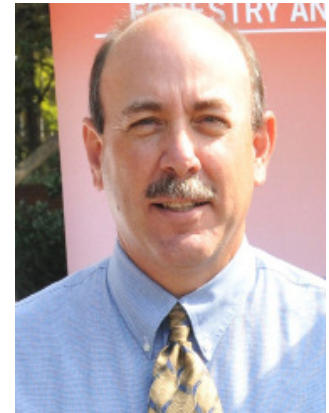
I have really enjoyed the opportunity to be a part of the “Bucket Brigade.” Not only has it assisted me in gaining supervised hours for my certification requirements, but also expanded my knowledge and ability to assist/take over a completely virtual course. Being a part of this experience has given me much more confidence to be able to teach in a virtual world, which is exceedingly important as we continue to navigate the COVID-19 pandemic and plans for the upcoming school year in 2021-2022. I believe this set of skills will be a large asset to me and the future school district when I begin teaching. It has been an absolute pleasure to work with these students and get to know them and their needs without ever meeting them in person. I think that the “Bucket Brigade” has not only increased participation and attendance in the course but also the student’s consideration for continuing an agriculture pathway in the future for higher education. I look forward to seeing how other student teachers and educators use this experience to

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improve their classroom engagement and interaction with not only virtual students but in-person students when they return as well.

Based on the experiences provided by the cooperating teacher and the student teacher, instruction in the virtual course prior to sending home buckets of supplies and materials indicated the students were reluctant to actively participate in discussion, most did not maintain video connection and the method of instruction relied heavily on lecture using PowerPoint presentations. Students were idle and lacked engagement prior to receiving their buckets of lab supplies.

Back to the facts. Fact #7: The laboratory investigations and hands-on projects supplied through the Bucket Brigade program allowed students who were learning only in a virtual environment to tangibly engage in their agriscience course. Fact #8: The VLA students became more motivated because they were able to use the supplies and materials to actually “learn by doing” rather than simply sit, watch and listen to the teacher. Fact #9: Agricultural Educators always seem to rise to the challenge. Fact #10: Agricultural Educators should be recognized and commended for their constant efforts and dedication to go above and beyond the call of duty!



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Student Teaching in a Pandemic: It is All About Perspective

by Jenna Offerman, Jay Solomonson,
Lucas Maxwell

As we approach the one-year anniversary of our schools and universities being shut down to “flatten the curve,” it only seems appropriate to take a step back and reflect on the experiences of this past year. As educators, this has been a challenging year for us all. In a week’s notice, we were required to move entire courses online, teach to faceless names on Zoom, and conduct virtual activities and meetings for the unforeseeable future, all while worrying about a global pandemic. As a veteran educator, these challenges appeared impossible. Further, imagine going through this as a new teacher or more difficult yet, a student teacher. Let’s read and find out how one student teacher overcame these obstacles and chose to look at the positives and used these circumstances to become a better teacher.

Pre-COVID Concerns

When you begin your undergraduate experience in agricultural education your student teaching experience seems ages away. It can also be a little frightening because you wonder how you will juggle making connections with your students, create engaging lessons, and balance the workload of advising numerous FFA activities and events. At the same time, the thought of student teaching is super exciting because you are one step closer to finishing your bachelor’s degree and getting that teaching license you have been working so hard for the past several years.

I started my undergraduate program as an Agribusiness major at Illinois State University, and shortly thereafter decided that teaching was something

that really interested me. So I added the Agricultural Education sequence to my degree plan and started the journey to become a licensed agriculture teacher. While I grew up in a rural community and went to a high school where a majority of kids were involved in agriculture classes, FFA, and 4-H, I was not one of them. With that being said, I worried if I knew enough about FFA and how I would teach content that I had not myself been taught before I entered college.

If these worries weren’t enough as I began my student teaching experience, throw a global pandemic into the mix and it just got ten times more frightening. I was no longer concerned with how I would connect with my students in-person, but how I would manage this through a computer screen. I knew it was definitely going to be a challenge. My thoughts instantly went to how I would engage all of these students, how I would navigate the chaos of technology, and how I would connect with my students in this new “normal.” To manage this I knew I needed to change my mindset and view these potential struggles as opportunities to become a better agriculture teacher.

Engaging ALL of my Students - Google Meets to the Rescue!

Once I got into the mindset that this was the new “normal,” I was able to push past the feeling of being overwhelmed. I realized while applying for my first job, I could use these COVID-19 teaching experiences to show how I could adapt to meet the needs of all

learners. My pre-service clinical teaching experiences at Illinois State University introduced me to several great tools to virtually interact with students and fun ways to keep them engaged that also worked for my in-person learners. The most useful of these was using Google Meets to interact with both groups of students at the same time.

At the beginning of the pandemic, I was dealing with in-person learners in the morning and remote learners in the afternoon. This meant I was teaching the same lesson for forty-five minutes in the morning to my in-person students then teaching it again in the afternoon for my remote students, but only getting twenty minutes to teach the content. Using this approach my Cooperating teacher (CT) and I felt we were unable to engage the remote students as well as the in-person students due to the time restriction. Due to this, we decided to require our remote students to log into a Google Meet during the morning regularly scheduled class time. This way the remote students could follow along with the PowerPoint presentations, ask questions, and even participate in the group activities. Once we had our virtual learners “in class” each day engaging them was the easy part.

Technology for Everyone - Nearpod

One thing I struggled with prior to student teaching was technology. I am 22 but would much rather have everything printed out, three-hole punched, and put into binders. This is how I have always organized myself and how I always assumed I would organize my students and my future classroom. With remote students and school districts worried about spreading coronavirus through paper assignments, the idea about binders and handouts was quickly thrown out the window. I had to figure out a way to pro-

vide these materials digitally. Then I remembered the digital platform Nearpod. During student teaching Nearpod became one of my new best friends. I was able to import PowerPoints into the program, add questions and polls, and incorporate additional interactive activities into my lessons. I was first introduced to Nearpod my Junior year of college in a course where the professor used it to take attendance and engage students in the lecture. Nearpod allowed my remote students to view the presentation and engage with the content through questions/polls/drawings/etc. Prior to Nearpod I would just go through my lesson using more traditional instructional methods and questioning techniques and get blank looks until I would coach the answer out of a student. It was a win for both my virtual and in-person learners because they were able to engage with the lesson through their phones rather than trying to use them for non-academic purposes.

Making Student Connections

The last thing that had me stressed during student teaching in the pandemic was how I would make connections with my students. With few to no FFA events and half of my students logging in over a computer, I was worried how I would get to know each student during my time there.

After a week of being at the school this was no longer a worry. Highland High School, its staff, and students made this easy for me. Students were interested in what I could offer the program and eager to hear my thoughts and perspective. My CT was in the same situation as we both tried to create lessons to connect with students as we went through the semester. After the second week, I felt I was beginning to know my students. This made creating those connections easy. Students were telling me things they were interested in and we were finding ways to incorporate

those interests into their Supervised Agricultural Experiences (SAEs). One of my students who was really struggling with the adjustments that come from being in high school was one of the first students I was able to make connections with through mutual interests. During the first week of school we had all students and myself bring in three to five items that represent who we are as a person. One of my items was a plant and through that I was able to make a specific connection with a student and introduce them to the greenhouse and SAE options that revolved around those opportunities.

Final Thoughts

While last fall was a crazy time to enter the world of education, I would classify it as nothing short of an amazing experience. The biggest take away from this experience is that you never stop learning. My cooperating teacher, Mrs. Rene Barr, helped me realize this. She was an amazing source of support and helped me see that even with more than 10 years of experience, she was being forced to learn new things in order to teach during this unique situation. With her help, I was able to put into place practices that were functional for virtual and in-person learning. I am confident that this experience has only made me more “marketable” to future schools when submitting job applications. Overall, student teaching during COVID-19 was a crazy time not just for me, but for my students, my CT, and my professors back at Illinois State University. Our meetings were pushed to Zoom and my observations became my professor logging on and watching me teach through a com-

puter. Whether this is the new “normal” or if eventually we find a way to go back to normal, I came out of student teaching feeling more than prepared after finding ways to engage my students, incorporate technology, and connect with my students to take on my first teaching job no matter what the circumstances may be next semester.



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Teaching Undergraduate Students Research Skills Through Experiential Learning

by Susan Murray and Samantha Siemers

The experiential learning focus of post-secondary agriculture courses has been a long-standing component of its curriculum. Emphasis is placed on learn by doing by many agriculture instructors at Southeast Missouri State University in Cape Girardeau, Missouri. Students cannot learn from textbooks alone, nor from observation of the work of others. Agriculture courses require students to be active participants in the learning process. Experiential learning allows students to bridge the gap between theory-based concepts taught in the classroom and real-world applications. Experiential learning has value far beyond the classroom walls, it helps students to achieve intellectual goals as their capacity for critical thinking and application of knowledge grows beyond the classroom. The Agribusiness: Animal Science curriculum at Southeast Missouri State University implements experiential learning activities that allow students to apply knowledge gained in the classroom to real-world scenarios. An experiential learning opportunity was developed for a group of junior or senior Agribusiness: Animal Science students. These students enrolled in an upper level 'Topics in Agriculture' course. Prior to course enrollment, students must have successfully completed two required courses within the department's agribusiness core curriculum. One of which is a lower-level agribusiness data analysis course which provides students with a foundation of computation and modeling, which is coupled with introductory data

analysis and development of research methodology and communications. The other required course is an introductory level course within the students desired area of study (e.g. agronomy, animal science, horticulture, etc.). In this case, all students had completed the introductory animal science course. Both cohorts of students also successfully completed the lower-level beef production course. This is an elective course in the animal science curriculum that introduces handling, breeding, feeding, and management of purebred and commercial cattle. The course contains a laboratory component that utilizes the David M. Barton Agriculture Research Center where students first begin to gain hands-on cattle handling and management skills. The Agribusiness: Animal Science curriculum at Southeast Missouri State University allows for students to build upon previous coursework and classroom experiences. Though cohort students each successfully completed the beef production course, only a portion of them had previously taken the animal handling course offered by the department. Animal handling is a one credit hour course that offers proficiency in care, handling, and routine procedures for large livestock animals, with an emphasis on student and animal safety. Since some students did not previously take this course, the researchers spent extra time on day one of the study to instruct and review handling techniques before proceeding with the research.

Co-instructors of the Topics in Agriculture course outlined an experimental, hands-on study where students would utilize beef steers at the David M. Barton Agriculture Research Center and determine average daily gain between a group of implanted and non-implanted animals. The study was first conducted in Spring 2020 (trial year one) with three Agribusiness: Animal Science students. The study was repeated in Spring 2021 (trial year two) with four Agribusiness: Animal Science students. The purpose of the study was to determine the difference in average daily gain (ADG) for a group of crossbred sim-angus beef steers with and without a hormone implant. Prior to beginning the study, an initial weight was collected, and electronic identification ear tags were placed in each animal's ear. Students were responsible for splitting animals into two groups with a similar average weight. These groups would serve as the control and experimental groups within the study. This portion of the study allowed students to demonstrate skills related to research methodology and data collection.

In week two of the course, students



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learned to place hormone implants in the ears of selected animals. Researchers walked through the process and technique of administering hormone implants with each student. Weights were collected on each animal and each subsequent week for eight weeks. At each weigh-in day, students demonstrated fundamental skills of safe cattle handling, chute and scale operation, and transportation to and from confined feeding facilities to handling facilities.

Each week, students collected data and entered it into an Excel spreadsheet for further analysis. Students calculated ADG on a weekly basis using the equation: $ADG = (\text{pounds gained} / \text{day})$. Students enrolled in the spring 2021 course were asked to compare the ADG between trial years one and two. This portion of the project allowed students to demonstrate computer and data analysis skills.

Additionally, a second experiential learning project was conducted in trial year two of the study. One Agribusiness: Animal Science student utilized the steers to determine feed utilization. This portion of the project allowed students to apply information learned in Feeding Ruminants, a senior level animal science course. She was presented with a feed and waste manual and asked out to carry out the procedures. Feed and manure samples were collected at weeks three, six, and eight for a total of three collection dates. One feed sample and two manure samples were collected each time. Samples were sent to a lab for nutrient analysis.

At the end of each trial year, students were required to work as a team to develop a research paper for submission to a peer reviewed journal. Students were also tasked with constructing a digital poster to *May-June 2021*

present at the student research conference hosted by Southeast Missouri State University's Honors College. While students completed the project in year one, they were unable to present due to the COVID-19 pandemic. Both components included an abstract, literature review, methods, data analysis and conclusion.

Students from trial year one, Spring 2020, have graduated and started employment in various sectors of the agriculture industry. Student feedback has indicated that students learn to work in real-world situations and apply problem solving methods in order to complete a task. Experiential learning activities at the University level have proven that students gain valuable skills for entering the workforce. Additionally, experiential learning activities present students with real-world scenarios and allow them to determine the actions needed to move forward.

While this project was completed at the undergraduate level, aspects of this project can be implemented at the high school level. For example, average daily gain calculations use skills from algebra courses and science components can be built into a nutrition unit. High school agricultural education teachers can also adjust the project to utilize other livestock species. The experiential learning components in this project can be applied to various projects across different topics in agricultural education.

The students who participated in this project include Dalton Dunakey,

Taylor Ferguson, Kassie Fluchel, Andrew Frank, Frederick Grohmann, Joseph Pierce, Alyssa Spencer, and Chloe Thomas. The project was supported by Zoetis and Straightway Feeds of Jackson, Missouri. The authors would like to thank Collin Schabbing, David M. Barton Agriculture Research Center Manager, and his student workers for their assistance in weighing steers and data collection.



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