November/
December
2018

Volume 91
Issue 3

The Agricultural EDUCATION MAGAZINE

Professional Conversations: Crossing Borders to Advance Agriculture Education

Concluding Thoughts as Editor: Great Past, Exciting Futures

by John C. Ewing

As I being to write my editor comments for the final time, I realize that there is still much to say to you in this very short column. I will do my best to wrap up my final comments in the space provided. There are three very important items that I want to leave with you. First, I want to provide a reflection on being the editor for the past 3 years along with some encouragement to you as a member of our profession. Second, I want to provide my thoughts on the current issue of the magazine, as it is a truly unique issue. Finally, I want to leave you with an introduction to the new editor, and the upcoming themes/theme editors for 2019.

Reflection and Encouragement

My time as the editor for the Agricultural Education Magazine has gone by very quickly. From a meeting three years ago with the previous editor to recent discussion with the incoming editor, the time in between seems to have gone by at a strikingly fast pace. I enjoyed my time serving the profession, and I hope that each of the readers have been able to secure information from our varied topics that make them better educators. As part of my reflection process, I began to think about other media that we subscribe to; newsletters, blogs, news feeds, paper magazines, newspapers and the list goes on and on, and it makes me reflect on why we have these materials sent to us on a daily, weekly, or monthly basis. The short answer is: We are looking for information that is important to us! Whether it is hobbies or sports or news, we want timely information. This information helps us to gain knowledge and skills in many areas of our lives, which we deem important. Upon further reflection, I realized that each issue of the Agricultural Education Magazine is focused on making you a better educator. The articles were designed in such a way that educators could take the information presented and implement it into their own classrooms and communities. Thus, I want to encourage you to continue reading each article carefully to find the "nugget" that you can take back to your classroom. Also, I want to encourage you to share the knowledge you gain through this magazine with others in the profession that may not currently subscribe. The way we get better is by working in community with one another, and this magazine is one resource that we can use to push our professional conversations forward.

Current Issue Views

The current issue of the Agricultural Education Magazine is unique in that it has both English and Spanish translations for several of the articles. The theme editor comments provide more detail on how the articles connect to one another, but I wanted to share some additional thoughts after reading the articles. I believe education is the most important avenue to keep society functioning and moving forward. Through the articles in the current issue, I was impacted by the desire of professional educators to help students, no matter their circumstances; including location. We are all working for many of the same goals to make our communities better places to live. I was encouraged by the desire of the educators to become better and to learn from one another, and from their students. Each of the authors understand the importance of being a leader in their classroom, which in turn helps their students grow. It is exciting to see the many opportunities being provided through agricultural education to teachers from across the world to learn and interact with teachers that are truly from the other side of the globe!

New Editor and 2019 Themes/Theme Editors

It has been a pleasure serving as the editor over the last three years, but it is also with great anticipation that I announce that Dr. Gaea Hock, Associate Professor of Agricultural Education at the Kansas State University, will be taking over as editor for the magazine. Dr. Hock has some great ideas to make the magazine more appealing and available to you, the readers. I look forward to seeing what she has in store for the coming years. I wish her well, and I know that we will all support her, as she brings our profession the most important and timely information to help us all be the best educators possible. As you will see from her selection of the 2019 themes and theme editors, she is already off to a great start!

January/February – "Collection of Informative Articles" (Potpourri issue), Dr. Eric Rubenstein, Assistant Professor, Agricultural Education, University of Georgia

March/April – "Facilitating Effective Inquiry-based Instruction", Dr. Kasee Smith, Assistant Professor, Agricultural Education, University of Idaho

May/June – "The Greenbook: Thirty Years Later", Dr. Tre Easterly, Assistant Professor, Agricultural Education, New Mexico State University

July/August – "Science Communication in Agricultural Education", Dr. Taylor Ruth, Assistant Professor, Agricultural Communications, University of Illinois at Urbana-Champaign

September/October – "Our Industry Needs Them: Teaching and Learning Leadership", Dr. Laura Greenhaw, Assistant Professor, Agricultural Leadership, Mississippi State University

November/December – "SAE for All? Seriously? Absolutely!", Mike Womochil, Agricultural Program Director, Colorado

Dr. John C. Ewing is an Associate Professor at The Pennsylvania State University and Editor of ***The Agricultural Education Magazine.***

CONTENTS

Professional Conversations:

Crossing Borders to Advance Agriculture Education

Subscriptions
Subscription price for *The Agricultural Education Magazine* is $15.00 per year. Foreign subscriptions are $25.00 (U.S. currency) per year for surface mail, and $40 (U.S. currency) foreign airmail (except Canada). Orders must be for one year or longer. We can accept up to a three year subscription. Refunds are not available. Please allow 4 - 6 weeks delivery of first magazine. Claims for missing issues cannot be honored after three months from date of publication, six months for foreign subscriptions. Single copies and back issues less than 10 years old are available at $5 each ($10.00 foreign mail). All back issues are available on microfilm from UMI University Microfilms, 300 North Zeeb Road, Ann Arbor, MI 48106. UMI University Microfilms telephone number is (313) 761-4700. In submitting a subscription, designate new or renewal and provide mailing address including ZIP code. Send all subscriptions and requests for hard copy back issues to the Business Manager: Jay Jackman, National Association of Agricultural Educators (NAAE) 300 Garrigus Building, 325 Cooper Drive, The University of Kentucky, Lexington, Kentucky 40546-0215, Phone: (859) 257-2224, FAX: (859) 323-3919.
E-mail: NAAE@uky.edu

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

Editor
Dr. John C. Ewing, Associate Professor, Agricultural and Extension Education Program, The Pennsylvania State University, 215 Ferguson Building, University Park, Pennsylvania 16802, Phone (814) 863-7463, FAX: (814) 863-4753.

E-mail: jce122@psu.edu

Publication Information
The Agricultural Education Magazine (ISSN 0732-4677), published bi-monthly, is the professional journal of agricultural education. The journal is published by The Agricultural Education Magazine, Inc. at 300 Garrigus Building, The University of Kentucky, Lexington, Kentucky 40546-0215.

Periodicals Postage Paid at Lexington, Kentucky and at additional mailing offices.

POSTMASTER: Send address changes to The Agricultural Education Magazine, attn: Jay Jackman, 300 Garrigus Building, The University of Kentucky, Lexington, Kentucky 40546-0215. Phone: (859) 257-2224, FAX: (859) 323-3919.

Front and Back Cover Photos provided by Melanie Miller-Foster

Why Beyond Borders

Dear Readers,

Welcome to this very special edition of the Agricultural Education Magazine. We believe that this is the first bilingual edition of the magazine, with some of the articles printed in both Spanish and English. Allow us a moment to lay the context.

Nestled in the highlands of western Guatemala is a humble educational institution called Universidad del Valle de Guatemala Altiplano. It serves a primarily indigenous population, with many students speaking Spanish as a second language.

Students at UVG-Altiplano face many obstacles. Poverty, malnutrition and violence are constant issues that many students face. It is not uncommon for students of many different ages to be in a single classroom, because when students cannot pay the school fee, they simply cannot attend class until they can pay to continue. It is a regular occurrence for students to take a leave of absence to work for a period, and then return once they can pay for another semester of tuition. It can take many years to graduate, with graduation a milestone that many never achieve. Many young people lose hope and migrate to the U.S. in hope of better opportunities.

But things are hard for the instructors as well. Classrooms are open-air, and are equipped with only the necessities. Instructors must bring their own markers to use on the whiteboard, and plug their own computers into the small tv screens hanging high on the wall. Many instructors have one or more outside jobs, because teaching doesn't come with adequate pay. Some teach at more than one institution, traveling long distances on public bus to teach their classes. Many arrive tired after a full day's work, only to power through an evening class.

This global edition of the Agricultural Education Magazine features the voices of these UVG-Altiplano instructors as they express their accomplishments and the barriers that they face in their teaching. On each topic, a companion article from a U.S. teacher is presented. Both articles are presented in both English and Spanish. To conclude, there is an article from the team at Oklahoma State University that further discusses the importance of hosting visiting scholars from several countries in Africa to contribute to their development as change agents.

Together, we can work toward supporting agricultural educators around the world and move towards solutions to the wicked problems of our time - climate change, food security, poverty and violence to name just a few. We believe that the foundation of this aspirational vision is EMPATHY. Empathy -the ability to understand others' feeling and needs - is an emotional literacy skill that will allow us as educators and our students to have the capacity to effectively steward our interconnected food, fiber, and natural resource systems. After reading this issue, we would invite you to join us in exploring the global connection of empathy deeper in the 2019 Global Learning in Agriculture Online Professional Development Conference: #GLAG19- Cultivating Empathy in a Global World. Just email teachag@psu.edu to learn more!

We hope you enjoy this special global edition!

Melanie and Daniel Foster

Melanie and Daniel collaborate in leading the Global Teach Ag! Initiative at Penn State. Melanie is with the College of Agricultural Sciences Office of International Programs and Daniel is with the department of Agricultural Economics, Sociology and Education

Rewards and Challenges of Authentic Work Experiences For Agricultural Students

By: Manuel Zacarías Ixmatá Guarchaj

This article summarizes the main activities developed as part of the individual professional development process that I have taken on during the past academic year. My goal was to develop projects that would give students the opportunity to acquire hands-on skills that will make them more competent in the school and in the workplace.

This proposal requires a joint work between the different subjects in the major, teachers and students, as well as the commitment of university leadership.

During the 2017 academic year, I began to work with my teaching colleagues to coordinate activities and projects between the different courses that we teach. These activities were:

a) **The construction of livestock facilities,** a coordinated activity between the plant sciences and the animal science courses. The facilities are used for raising livestock such as swine, birds, sheep, rabbits and goats. At the end of the cycle, students processed and marketed the products at an event on the UVG-Altiplano campus.

b) **Establishment and agronomic management of crops** of economic and nutritional importance by students, such as promoting sovereignty and food security for low-income families with high rates of malnutrition. This project involved the construction and management of an agroforestry nursery in a course called Seeds, Nurseries and Plant Propagation for first-year students. Students have the opportunity to develop skills in sexual and asexual reproduction of plants including forest, fruit, ornamental and other species. This project was achieved with the help of the management of the Agroforestry Department as well as the coordination with the teacher and students of the Forest Module course.

c) **Environmental projects:** as a result of the coordination between the courses of Climate, Natural Resources and Environment and Supervised Practices; students planned, proposed and executed environmental projects in the centers where they conducted their internships. Examples of Environmental projects of students in their supervised practices include:

A. Design and opening of a path and rest area for visitors in a solid waste recycling plant in San Jorge La Laguna, Sololá.

B. Design and implementation of a small ecological park in the urban area of the department of Quetzaltenango.

d) **Educational tours** coordinated between the courses of Export Crops and Agricultural Costs and Economics, students visited producers and exporters of vegetables and non-traditional ornamental plants of Guatemala, so that students can gain first-hand knowledge about agricultural export regulations. Examples of educational tours performed with UVG-Altiplano students include:

A. Visit to the departments of Climatology and Agrometeorology of the National Institute of Seismology, Volcanology, Meteorology and Hydrology INSIVUMEH. Eighteen students participated in this tour and learned about the meteorological instruments used for climate and environmental forecasts, which are fundamental for decision making in agronomy.

B. Visit to the Plant "El Pino" belonging to the MOSCAMED program. In this tour 40 students participated, where they learned

Three tips:

1. Collaboration is fundamental to success.
2. Students should practice working in a team.
3. Courses should connect through common themes to develop student problem solving skills.

about the production and use of sterile flies in the autocidal control of the fruit fly, an important pest in the production of fruits tropical and deciduous.

The main obstacle to creating these opportunities for students has been scheduling project activities. Most courses meet just once per week, meaning that students only have contact with ongoing projects once and the rest of the week the projects are abandoned. This is also due to the fact that there are no university personnel in charge of these projects other than the students themselves. The other main obstacle is the schedules of teachers involved in the projects, which do not overlap in most cases. This makes communication difficult and affects the coordination of activities.

Photo Caption: Members of the Global Teach Ag team with Manuel

Main Projects developed during the first cycle of the Year 2018 in the Technician and Agrofroestry engineering of the UVG Atiplano.

Construction and management of an agroforestry nursery: this project was designed and executed in the course of Seeds, Nurseries and Propagation of plants, with first-year students of the Agroforestry Technician; based on the problem of the lack of a space where students can develop skills in sexual and asexual production of plants (forest, fruit, ornamental and other species). This project was achieved with the help of the management of the Agroforestry Department as well as the coordination with the teacher and students of the Forest Module course.

Alliance with the agro-exporter "Cuatro Pinos" for the production and commercialization of mini-zanahoria and French bean: in the course of Export Crops II, two production plots were implemented with the second year students of the Agroforestry Technician with the technical support of the Cooperativa Agrícola Integral of Cuatro Pinos, RL as one of the largest exporters of non-traditional crops; providing the students with the accompaniment in the process of production and commercialization of minizanahorias and French bean. In which the students and teacher acquired the commitment to deliver quality product according to foreign market standards, at the appropriate time, considering the UVG as a producer for the agro-exporter. The financial and accounting part is being carried out in coordination with the cost and economics course teacher.

Design of an Integrated Pest and Disease Management plan for crops of economic importance in the region: this project is being developed in the course of Integrated Pest and Disease Management with the second year students of Agroforestry Technology Engineering. Each student is committed to design, socialize and share their MIP plan, after receiving guidance from the teacher. This project aims to contribute to solve problems of pest and disease management that many producers in the region face. In addition, an educational tour was coordinated with the Agricultural Engineering and Agricultural Industrialization courses on a farm belonging to the National Coffee Association, ANACAFÉ, where the students reinforced their knowledge on integrated coffee pest management plans, coffee beneficiation and preparation. of coffee for consumption.

Proposal

To improve the quality of the service offered by the UVG to the students of the Agroforestry department, it is recommended to develop projects that contribute to reinforce the areas through the modules that are presented in the following scheme, where students will have the opportunity to acquire skills. and skills that will make them more competent in the school and in the workplace.

This proposal requires joint work between the different subjects of the career, teachers and

students, as well as the commitment of the authorities of the university center.

Main obstacles faced in the development of the presented projects.

The main obstacle has been the defacement that occurs in the execution of the project activities because only the class periods corresponding to each course are available and the rest of the week the projects are abandoned, resuming them until the following week. This is also due to the fact that there are no personnel in charge of these projects other than the students themselves. The other obstacle is the non-coincidence of schedules of teachers involved in the projects, which makes communication less effective and this affects the coordination of activities.

universidad del valle de guatemala campus altiplano

RECOMPENSAS Y DESAFÍOS DE EXPERIENCIAS DE TRABAJO AUTÉNTICO PARA ESTUDIANTES AGRÍCOLAS

Por: Manuel Zacarías Ixmatá Guarchaj

Docente de la Facultad de Ingeniería Agroforestal

En este artículo se resumen las

principales actividades desarrolladas, como parte del proceso de desarrollo profesional individual, basadas en las recomendaciones del personal de Global Teach Ag, quienes lideran este proceso en la UVG.

Durante el ciclo académico 2017, la labor docente se basó en la coordinación de actividades y proyectos entre los diferentes cursos y colegas. Con el objetivo de que el estudiante adquiera las competentes y habilidades que le generen capacidad de análisis y toma de decisiones en el campo laboral.

Dichas actividades fueron:

a) La construcción de unas instalaciones pecuarias, actividad coordinada entre los cursos de Cultivos y especies para la Seguridad Alimentaria y Nutricional y Módulo Pecuario.

La cual se utiliza para la explotación pecuaria con especies menores como porcinos, aves, ovinos, conejos y caprinos, logrando al final del ciclo, la producción procesamiento y comercialización de productos en una feria científica promovida por la Universidad del Valle de Guatemala, campus Altiplano.

b) Establecimiento y manejo agronómico de cultivos de importancia económica y nutricional por los estudiantes, como fomento de la soberanía y seguridad alimentaria para las familias de escasos recursos y con índices elevados de desnutrición.

c) Proyectos ambientales: como resultado de la coordinación entre los cursos de Clima, Recursos Naturales y Ambiente y Prácticas supervisadas; en donde los estudiantes planificaron, propusieron y ejecutaron proyectos ambientales en los centros donde realizaron sus prácticas supervisadas.

d) Giras educativas coordinadas entre los cursos de Cultivos de exportación y Costos y Economía Agrícola, visitando empresas productoras y exportadoras de hortalizas y plantas ornamentales no tradicionales de Guatemala, para que los estudiantes conocieran experiencias sobre la agroexportació.

Manuel Zacarías Ixmatá Guarchaj, Faculty of Agroforestry Engineering

Reshaping SAEs to Expand the Impact of Experiential Learning

by Darla Romberger

It is always motivating to read success stories from our Agricultural Education colleagues and witness the perseverance to create learning opportunities for students. After reading about the work of Mr. Manuel Zacarias Ixmata Guarchaj and his efforts to develop work-based learning opportunities in rural Guatemala, I was quickly reminded about one of the most powerful lines in FFA Opening Ceremonies. Mr. Guarchaj embodied the phrase, "without labor, neither knowledge nor wisdom can accomplish much." It is evident that this endeavor required hours of effort and planning. Nonetheless, the goal of providing experiential learning prevailed so students could apply knowledge and wisdom learned in the classroom in a real-life setting to prepare for future careers.

The efforts of Mr. Guarchaj speak volumes about the value of experiential learning and demonstrates a global perspective on the importance of providing students with relevant experiences to prepare for future careers. If experiential learning is not emphasized in an Agricultural Education program, when will students apply content from the classroom to real-world scenarios? Supervised Agricultural Experiences (SAEs) are a valuable opportunity to differentiate learning goals for students while allowing a student to gain problem-solving and decision-making skills to inform future career decisions. Teachers from across the country recognize that SAEs are successful in enhancing classroom instruction, developing managerial skills, and improving job-related attitudes (Berkey & Sutphin, 1984; Cheatham, 1980). Conversely, challenges have been documented to implementing quality SAE programs and include teacher time constraints, increasing enrollments in Agricultural Education programs, and changing program facilities (Retallick & Martin, 2008). As programs continue to evolve and Agricultural Educators from various backgrounds are hired, the following suggestions can improve the integration of SAEs while maintaining a balance between all components of a successful program.

Greater Inclusion of Foundational SAEs

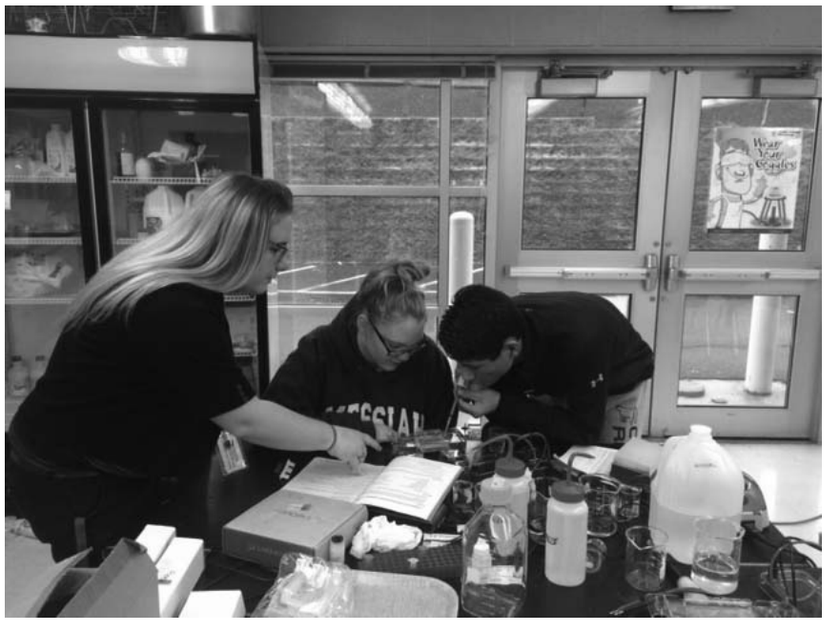
The National Council for Agricultural Education expanded the definition for Foundational SAEs to include career exploration, agricultural literacy, personal finance, workplace safety, and employability skills. Many first-year students struggle with developing an SAE because of the complex nature of self-designing an experience and not fully understanding the purpose of an SAE. Providing structured Foundational SAEs that allow students to genuinely explore their interests while developing relevant career skills may be a more realistic approach for first-year students. Participation in a Foundational SAE should encourage exploration of Immersion SAEs (Entrepreneurship, Placement, Research, School-Based Enterprise, or Service Learning).

Establish Realistic SAE Supervision Methods

Time is a limiting factor in establishing and supervising SAEs in all programs. Finding a balance to establish SAEs for new members while mentoring State FFA Degree hopefuls can be challenging. Agricultural Educators should utilize available technologies such as Skype, Google Hangouts, or even school Learning Management Systems to develop innovative supervision methods that fall within school district guidelines. Ideas include creating a video blog that answers SAE-specific questions posed by the instructor or conducting an SAE visit remotely using available technology. A greater inclusion and recruitment of SAE mentors can greatly improve the supervisory capabilities for a program. If suitable mentors can be located within a community, SAE supervision time is greatly decreased as the Agricultural Educator can easily discuss student achievement and skill development with their mentor. Recognition and positive promotion of SAE mentors can improve retention of current mentors and encourage other individuals to become involved.

Embrace Program Strengths

Each Agricultural Education program has unique attributes that contribute to developing experiential learning opportunities for students. Utilizing the National Quality Program Standards, Agricultural Educators can determine vigorous components of



their programs and evaluate how to develop SAEs around those strengths. If a program has updated facilities and adequate equipment, school-based enterprises could be developed by groups of students. School districts with entrepreneurship coursework could allow students to develop a new product and conduct consumer research. Urban school districts could support agricultural literacy SAEs where students plan outreach events and document the change in consumer perception of agriculture. After strengths are identified, the resulting SAE projects will be more realistic for students to complete and relevant to the needs of community.

Developing quality experiential learning can be challenging, but understanding the endless benefits for students is a great motivation to continue developing innovative approaches surrounding SAE implementation. The inclusion of Foundational SAEs can allow greater student understanding of their own interests so a meaningful Immersion SAE can be planned and executed in subsequent years. Designing new SAE supervision models through the use of available technology and additional manpower can reduce supervisory time. Finally, identifying the strengths of an Agricultural Education program can provide insight into types of SAEs easily supported from existing infrastructure or community resources. Agricultural Education will continue to evolve, but the inclusion of experiential learning will continue to differentiate our programs as the solution to prepare students for post-secondary education or employment.

References

Berkey, A. L., & Sutphin, H. D. (1984). Status and importance/support for supervised occupational experience programs (SOEP) as perceived by the New York vocational agricultural teachers and their administrators. Paper presented at the Annual National Agricultural Education Research Meeting, New Orleans, LA.

Cheatham, W. J. (1980). Importance of supervised occupational experience in vocational guidance as perceived by Alabama vocational agricultural teachers. Dissertation Abstracts International, 40, 6115A.

Retallick, M. S. & Martin, R. A. (2008) Fifteen-year enrollment trends related to the three components of comprehensive agricultural education programs. Journal of Agricultural Education, (49)1, 28-38.

Darla J. Romberger
Agriculture Instructor/FFA Advisor
Cumberland Valley High School,
Mechanicsburg, PA

Mathematical Training in Agricultural Processes

by Mtro. Raymundo Mardoqueo Velásquez Poncio

As a mathematics teacher of high school students and first year of university for three consecutive years, some doubts and very common questions have arisen, that, at the time, the answer was more or less to evade or deviate a more accurate criterion or what the student needed to listen. What is this content for? Or Where is this used? Among the arguments that currently have to be used are related to the context but even more accurate, in the own life the mathematics serves, likewise giving simple opinions to social problems, also comparing forms or spaces that have equivalence between them.

It is also understood as the action of thought that systematizes ideas allowing to solve a situation. The reasoning activity adapts several forms based on the knowledge and experience of the individual who orders and directs all ideas towards the logical solution of a problem under the fulfillment of certain conditions that need an explanation. Mathematics is presented in the life of the individual since birth and begins to relate to their context, knowing colors, shapes, sizes and quantities.

However, it is important to combine the previous ideas that lead to present a formation of the human being where mathematics is always present. On one occasion an observation exercise had to be carried out as one of the main steps of the scientific method, what is interesting is when the result of this observation is shared, which was carried out in a green area of a house. The groups of students one by one shared characteristics of the observed noticing that you always heard mentioning quantities and geometric shapes.

This then leads to landing the main idea that wants to convey "The relationship of mathematics in agriculture."

In this aspect highlights very important aspects such as: Arithmetic growth, geometric behavior of plants and numerical series in agricultural growth. Mathematical training goes beyond knowing numerical processes. It is important to know what it is like, since a seed is sown and this produces from that moment it starts to develop an impressive mathematical model until the plant ends or ceases to exist.

LA FORMACIÓN MATEMÁTICA EN LOS PROCESOS AGRÍCOLAS

Por: Mtro. Raymundo Mardoqueo Velásquez Poncio

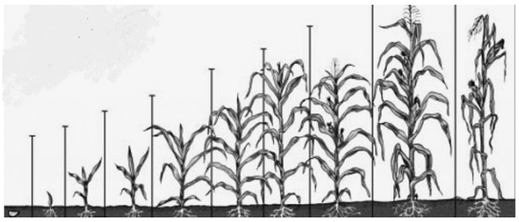
Profesor de Matemática UVG - ALTIPLANO

Como profesor de matemática de estudiantes de segundaria y primer año de universidad por tres años seguidos, han surgido algunas dudas y preguntas muy comunes, que, en su momento la respuesta era más o menos para evadir o desviar un criterio más acertado o lo que el estudiante necesitaba escuchar. ¿Para qué sirve este contenido? O ¿En dónde se utiliza esto? Entre los argumentos que actualmente deben de utilizarse se relacionan con el contexto pero más acertado aun, en la vida propia sirve la matemática, así mismo dar opiniones simples a problemas sociales, también el comparar formas o espacios que tienen equivalencia entre sí.

También se entiende como la acción de pensamiento que sistematiza ideas permitiendo resolver una situación. La actividad de razonamiento adapta varias formas que tiene como base los conocimientos y la experiencia del individuo que ordena y orienta todas las ideas hacia la solución lógica de un problema bajo el cumplimiento de ciertas condiciones que necesitan una explicación. La matemática se presenta en la vida del individuo desde que nace y empieza a relacionarse con su contexto, conociendo colores, formas, tamaños y cantidades.

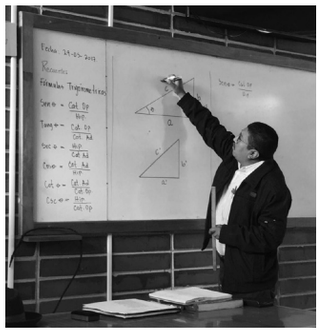
Sin embargo es importante hilvanar las ideas anteriores que llevan a presentar una formación del ser humano donde la matemática está siempre presente. En cierta ocasión se tenía que realizar un ejercicio de observación como uno de los principales pasos del método científico, lo interesantes es cuando se comparte el resultado de esta observación el cual se realizó en una área verde de una casa habitacional. Los grupos de estudiantes uno a uno compartía características de lo observado notándose que siempre se escuchó mencionar cantidades y formas geométricas.

Esto lleva entonces a aterrizar a la idea principal que se quiere transmitir "La relación de la matemática en la agricultura".



Fuente: INATEC Programa Manejo Integrado de Plagas2003

En este aspecto se destacan aspectos muy importantes como: Crecimiento aritmético, comportamiento geométrico de las plantas y series numéricas en el crecimiento agrícola. La formación matemática va más allá de conocer procesos numéricos es importante conocer como es, desde que se siembra una semilla y esta produce desde ese momento inicia a desarrollar un modelo matemático impresionante hasta que la planta termina o deja de existir.



Mtro. Raymundo Mardoqueo Velásquez Poncio
Professor of Mathematics UVG - ALTIPLANO

Imágenes de productos agrícolas que se utilizaron en una presentación de matemática, haciendo relación a fórmulas y ecuaciones básicas.

UVG – Altiplano – Mayo de 2017

Perspectives on Math in Agricultural Education

by Carson Letot

Raymundo begins the article with the question that all my education classes and all of my lessons have always started with: "how is this relevant?" Since leaving the ranks of higher education I've taken the question of relevance past the point of instant gratification for the student in the moment of the lesson and into a new philosophy of sustainable responsiveness to relevance. Students shouldn't just ask the teacher why a particular topic is relevant, they should be asking themselves. Raymundo appears to agree with this philosophy and even asks for the students to look outside of class and find math in the world around them. Instead of the students settling for being reactionary, he challenges them to explore. But what does it mean to explore? Better yet, what does it mean to "explore" in the field of agriculture?

The act of exploration requires one to travel in or through a place in order to learn about or familiarize oneself with it. Keeping in the mind that academia can be thought of as akin to a town, where in the places around the town that have not yet become familiar are just like the knowledge and connection to topics in a previously unstudied subject. Raymundo conjures the images that a child might dream of when looking around at their environment and trying to make sense of it all. If young children stare into the world with curiosity and a yearning for answers to questions they see around them, why then do we tend to produce students who take issue with a lesson because they doubt the relevance of the topic

to their life? Enter mathematics and agriculture.

Mathematics is based on solutions. Every problem has a solution. A number has a value and when equations are built and populated with the values, the answers bring conclusion to the effort. Agriculture contends with a delay in the gratification, but with patience comes the thrill of harvesting the literal fruit of the labor. After years in agriculture; practicing both the delivery of theory as well as the practical application, I can say that agriculture is in its essence, a math problem. You have inputs, outputs, and variables to factor into the equation. Congruently, math takes on a very real place within agriculture when you: calculate bed space, calibrate fertilizers, measure soil moisture, project harvest totals, balance accounts, and determine seed needed to make the next season a success. Factor in livestock or compost management, and one starts to see where Raymundo believes that math and agriculture complement each other.

Raymundo wants what every teacher wants: a curious student who yearns to make connections. I too seek those students, but every day in the field of academia has shown me that as rewarding as it is to have the student that wants to learn, there's another student who has the potential to provide even more benefit; the students who uncovers the magic of learning after years of indifference towards the process. The student who unveils a change in attitude towards learning is a student who confirms that teaching has never been more valuable. I don't see it every day in my classroom, but I seem to see it most often when working with animals, soil, or water. I see it when a student touches the topic. I see it when a student plucks the first fruit from a plant they seeded. I see it when a student stands back and marvels in the work they made possible. It's in the hands-on labor that a student discovers the worth of the subject, and ultimately its relevance. Math makes an appearance when the observations and the trial & error instead transforms into precision and solutions. When a student first places a seed in a pot, gives it water, and in due time watches as the plant emerges from the soil, their interest is peaked. When they calculate the soil used to fill the pot, the optimal fertilizer needed to satisfy the plant's nutritional requirements, and then tracks days to maturity in order to project the most desirable planting date for maturity next year, I myself, Raymundo, and teachers across the world know that they've cultivated a lifelong learner. A learner for life searches for relevancy and connections on their own. And when we think of what success in education looks like; it's the passing on of passion for explaining how the world works, and how topics like agriculture and mathematics intersect to support those explanations.

Carson Letot, Agriscience Teacher
Montague High School
Montague, Michigan

Perspectives of Professional Development of a New Teacher in Agriculture

by Oscar Ivan Yac Chavez

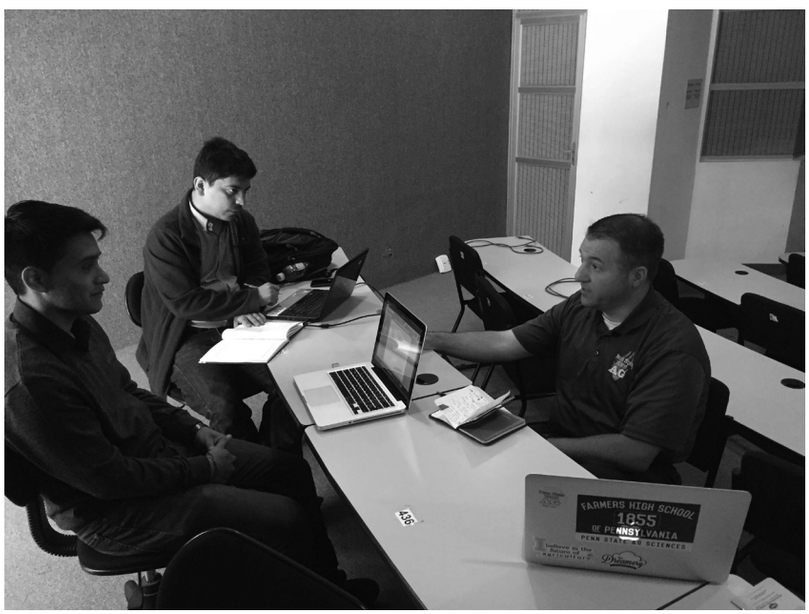
When I was studying Agroforestry, being a teacher was the last option in my list of ideal jobs, because I saw teaching very boring and tedious: having to grade assignments, exams, assign tasks and plan the class that was monotonous in the end; I had never taught, the only experience I had had was the occasional exhibition in some courses, for that reason, I had that perspective on this profession.

Emphasizing that I never imagined teaching classes, however, for work reasons I joined the wonderful world of teaching. The ideology I had was changing little by little with only having taught the first class, in addition, the comments of several people collaborated with this, because they told me that I would learn a lot and effectively, my first positive perspective was: increase my knowledge on the subject, and thus be able to teach students in an optimal way. To meet this goal, it took me time to research and schedule the class. Also, I had many doubts about myself; he did not know what would be the reaction of the students during the lesson, he feared that the topic to be taught would be boring or irrelevant, he lacked knowledge about teaching-learning methods.

I expected to control 35 students would be an easy job, however, in reality it is difficult (especially for someone without teaching experience) to make that number of students between 16 and 17 years pay attention. Mainly when it is a course whose period was the last of the day. One hopes to ensure that students do not get distracted by their participation, or by launching direct questions, but it is not always possible.

In the subject that I teach, I try to explain myself in the best way, since the contents are a bit complex, such as: soil, organic and conventional agriculture. My expectations for these topics are that students become aware of the care of soils, forests, animals and human health. My main goal is to generate in them critical thinking about the proper use of pesticides, monocultures, genetically modified organisms, because they are issues that generate controversy in Guatemala and in the rest of the world. I want them to have grounds to defend their positions, be it for or against them. Also, I want to develop in them a solid base for their professional training, so that when they arrive at the university, they are prepared to answer questions, perform essays and debate with other students. In Guatemala, and in many countries, the farmer is not given the value he really deserves, I want to instill in them a culture of respect towards these people, and that my students go and raise other people's awareness of this situation, since the activities they do are very important for all of us.

One of the barriers that I encountered during my classes was the doubt about myself, since I did not feel capable of teaching and I was afraid of not being understood correctly. I realized that some of



my students did not pay attention, they felt bored and sleepy, especially because the periods are the last of the day and they wanted to retire early, however, thanks to the support and encouragement of the Teach Ag! Program atThe Pennsylvania State University, I received techniques for students to pay more attention, make classes more fun and participate. With them I developed activities called E-Moments, one of them, my favorite, is the Jeopardy moment, which is based on an American television program. The students were very entertained during class, took notes and asked questions, then we went to play and evaluate how much they had learned. The results were satisfactory. They were very satisfied with the activity, since they learned in an unusual and fun way.

With these types of activities I managed to motivate myself more and to increase the confidence in me, because I did something different and it worked better than what I expected.

Improving aspects of my personality is within my perspectives as a new professor of Agriculture, of course. Be more patient, orderly, inquiring, accessible, increase my empathy, responsible, respectful and my list can continue. It is true that I cannot become a perfect teacher, but I can become a good one, as I have had several professors who have inspired me to teach with such passion so that the student does not lose concentration throughout the period and thus learn with ease. For me, teaching is a very respectable profession, since education is the best way to contribute to the development of our communities and, at the same time, of our countries.

Perspectivas de desarrollo profesional de un nuevo profesor en Agricultura

Cuando estudiaba Agroforestería, ser profesor estaba como última opción en mi lista de trabajos ideales, pues veía la docencia muy aburrida y tediosa: tener que calificar tareas, exámenes, asignar tareas y planificar la clase que al final resultaba monótono; yo nunca había enseñado, la única experiencia que había tenido era una que otra exposición en algunos cursos, por eso mismo, tenía esa perspectiva sobre esta profesión.

Recalcando que nunca me imaginé impartir clases, no obstante, por cuestiones laborales me incorporé al maravilloso mundo de la enseñanza. La ideología que tenía fue cambiando poco a poco con solo haber impartido la primera clase, además, los comentarios de varias personas colaboraron con esto, porque me decían que aprendería mucho y efectivamente, mi primera perspectiva positiva fue: aumentar mis conocimientos sobre el tema, y así poder enseñar de una manera óptima a los estudiantes. Para cumplir con esta meta, me tomó tiempo investigar y programar la clase. Además, tenía muchas dudas sobre mí mismo; no sabía cuál sería la reacción de los estudiantes durante la lección, temía que el tema a impartir les resultara aburrido o sin relevancia, carecía de conocimientos sobre métodos de enseñanza-aprendizaje.

Yo esperaba que controlar a 35 estudiantes sería un trabajo fácil, sin embargo, en la realidad es difícil (especialmente para alguien sin experiencia en docencia) hacer que esa cantidad de alumnos entre 16 y 17 años presten atención.

Principalmente cuando es un curso cuyo período era el último del día. Uno espera lograr que los estudiantes no se distraigan a través de la participación de ellos, o por medio del lanzamiento de preguntas directas, mas no siempre es posible.

En la materia que imparto, trato de explicarme de la mejor manera, puesto que los contenidos son un poco complejos, tales como: suelos, agricultura orgánica y convencional. Mis expectativas para estos temas son que los estudiantes tomen conciencia sobre el cuidado de los suelos, bosques, animales y la salud humana. Mi mayor objetivo es generar en ellos pensamiento crítico sobre el uso adecuado de pesticidas, monocultivos, organismos genéticamente modificados, porque son asuntos que generan controversia en Guatemala y en el resto del mundo. Quiero que tengan fundamentos para defender sus posturas, sea a favor o en contra de estas. Asimismo, deseo desarrollar en ellos una base sólida para su formación profesional, para que cuando lleguen a la universidad, estén preparados para responder preguntas, realizar ensayos y debatir con otros estudiantes. En Guatemala, y en muchos países, al agricultor no se le da el valor que realmente merece, yo quiero inculcar en ellos una cultura de respeto hacia estas personas, y que mis alumnos vayan y concienticen a otras personas sobre esta situación, puesto que las actividades que realizan son de mucha importancia para todos nosotros.

Una de las barreras con las que me encontré durante mis clases, fue la duda sobre mí mismo, puesto que no me sentía capaz de enseñar y tenía miedo de no darme a entender correctamente, me daba cuenta que algunos de mis estudiantes no prestaban atención, se sentían aburridos y con sueño, especialmente porque los períodos son los últimos del día y querían retirase temprano, sin embargo, gracias al apoyo y acompañamiento del Programa Teach Ag! De la Universidad de Pensilvania, recibí técnicas para que los estudiantes presten mayor atención, hacer las clases más divertidas y hacer participen.

Con ellos desarrollé actividades llamadas E-Moments, una de ellas, mi favorita, es el momento Jeopardy, que está basado en un programa de televisión estadounidense, los estudiantes estuvieron muy entretenidos durante la clase, tomaban apuntes y hacían preguntas, luego nos pusimos a jugar y evaluar qué tanto habían aprendido, los resultados fueron satisfactorios, ellos quedaron muy satisfechos con la actividad, puesto que aprendieron de una manera inusual y divertida.

Con este tipo de actividades logré motivarme más y aumentar la confianza en mí, pues hice algo diferente y funcionó mejor de lo que yo esperaba.

Mejorar aspectos de mi personalidad está dentro de mis perspectivas como nuevo profesor de Agricultura, claro está. Ser más paciente, ordenado, indagador, accesible, aumentar mi empatía, responsable, respetuoso y mi lista puede seguir. Es cierto que no puedo llegar a ser un profesor perfecto, pero puedo llegar a ser uno bueno, pues he tenido varios catedráticos que me han inspirado a enseñar con tanta pasión para que el estudiante no pierda la concentración en todo el período y así aprenda con facilidad. Para mí, la docencia es un profesión muy respetable, puesto que la educación es la mejor manera de contribuir al desarrollo de nuestras comunidades y al mismo tiempo, de nuestros países.

Oscar Ivan Yac Chavez, Instructor, Universidad del Valle de Guatemala

The Significance of 'Empathy' Within the Agriscience Curriculum

by Wayne Worthley

In reading Oscar's perspectives regarding his agriculture teaching in Guatemala, I find myself looking back to 1993 when I began my own agriculture teaching career in El Colegio Agropecuario – Simon Rodriguez in Latacunga, Ecuador. It was part of my Peace Corps assignment. I was young, inexperienced, and also naïve. Although I was to be the educator, it was soon obvious that I was receiving back much more than I was giving them. These were mostly students from small, subsistence family farms. Agriculture was their livelihood, and their interest, and most likely in that order. If I taught them anything at all, I would hope it would be that they feel valued and respected, as future agriculturists, and I pray that my mere presence and choosing to be with them for that short time would at least suffice for that much. But it was the students who made the larger contribution. Those students introduced me to the value of empathy in education.

Twenty-five years later I find myself still teaching agriculture students at Redland Middle School in southwest Miami-Dade County. I still make mistakes. Like Oscar, I agree that it is impossible to become perfect, even after 25 years in the same classroom. For years, I was focused on 'improving my practice' or 'increasing content knowledge' or 'diversifying the delivery method'. All of those things make for better teaching and learning, but they are not enough. What I have come to realize, and only in probably the last five years, is that my students learn much more, perform at higher levels and take greater risks when they are truly convinced that I genuinely care for them and strive to understand them. Instead of focusing on being a better teacher, I needed to prioritize understanding my students, each of them, individually, and making sure that the students are aware of it.

This year, my students come from 24 different countries other than the U.S. (meaning they or their parents were born there and practice the culture/language in their home). That creates a plethora of empathetic learning opportunities, especially in the culinary curriculum, which is part of our Agriscience magnet program. Students share recipes with each other through class assignments and activities and in doing so are learning about the many different cultures present in the classroom. When students bring me foods they made at home, I know they feel safe, valued, even loved. Oscar speaks about the importance of improving one's personality and offers some examples. I cannot overemphasize the importance of patience. Eventually, the students will 'get there'. Sometimes the student, and the teacher, have to fail miserably in order to realize the desired result.

All of my students have their photograph on the wall in the classroom with a SMART goal listed below. This is to create empathy and also a 'family atmosphere' where all students can better get to know and understand one another. The students feel valued and often congregate at that wall prior to taking their seat in the classroom. They want to learn something about a student in the program they may have just seen at lunch. Or maybe they heard their name mentioned by a fellow classmate and now want to put a face to the name. Maybe they are just wanting to get to know another Agriculture student/FFA member in the program. This has helped to create an empathetic classroom.

And sometimes it is just the intangibles that make the difference, those 'in the moment' teaching opportunities that we learn to recognize and then decide if we should take the risk, or not. Last year I finally had a student enroll into the program from Paraguay (which we've never had). After about a week of being in the class, she was at my desk computer showing me where she was from. I asked her if she'd like to share with the class some things about Paraguay, and she complied without any urging, which surprised me. I operated the search engine as she told me what to type and search for while she stood at the screen and narrated. After 30 minutes of viewing pictures, landscapes, people, food, and her favorite places to visit in her city, I'm convinced that she was feeling like part of our family and would feel accepted and valued in our established class. More importantly, the rest of us were also feeling very blessed to have had this young student find her way to us.

My response to Oscar's desire as a new agriculture teacher to increase his empathy??? I concur!

Wayne Worthley, Agriscience Teacher
Redland Middle School, Miami-Dade County Public Schools, Florida

Empowering Students for Domestic Animal Science Production

by Bayron René Mogollón

Within the curriculum of the technical and agroforestry engineering career of the Faculty of Engineering of the University of the Valley of Guatemala - Altiplano, Sololá, I believe several courses on the production of domestic animals should be integrated into the curriculum.

When the program in Agroforestry began there were no courses on domestic animals, even though the practice of agroforestry involves the integration of several production systems including livestock. Students were graduating from the program and did not have knowledge or experience with livestock, even though this was needed for them to be successful in their careers.

After several years we saw the need to implement some courses on animal science, and about three years ago I began to teach livestock courses including aviculture and beekeeping, sheep and goats, and animal husbandry. These were taught in a theoretical way within the classrooms of the University of the Valley of Guatemala - Altiplano, Sololá. We thought it practical to start with a farm of smaller species so that the students could carry out their management practices with several different species of animals. The idea was to build a small animal farm where the students would be the managers and provide all the care the animals required, as well as be responsible for the production and marketing of products and by-products produced by the farm.

There were no construction materials or economic resources available as the idea for a small livestock facility matured. But we noticed around campus there were some construction materials from a parking structure that were no longer being used and we could repurpose. We recycled wood and sheet metal, which became indispensable materials for building the minimum facilities to house the animals.

According to the basic knowledge imparted in the classroom on the construction of the livestock facilities, the students applied their knowledge by building the floor, walls, ceilings, and water facilities. The students did all the activities for the construction of the livestock facility. Once the the facilities were in place, the students collaborated economically for the purchase of animals of different species such as: rabbits, laying hens, broiler, goats, pigs, quail. They also obtained feeders, drinking troughs, cages, and nesting sheds.

Finally, the students organized themselves to begin the daily management practices, creating small working groups to attend to the different species of animals.

When the production of chicken and quail eggs, chicken and pork began, the first agricultural fair was held at the UVG facilities. The students prepared products and by-products for sale including sausages, pork rinds, rabbit meat, carnitas, chicken meat, pork, quail eggs and chicken. The fair involved parents, university personnel and visitors in the consumption of the food products.

The students had the opportunity to carry out the entire process from the purchase of small animals to the commercialization of the product to the generation of economic gains, learning and experience throughout the process. Currently the students are leading the effort to enlarge the facilities with more recycled resources, and are working to increase the number and variety of the animal specifies as well. The goal is to make the livestock facility economically self-sustaining.

Within the teaching - learning process, it is very important to use appropriate techniques and methods for the teaching of animal science, to have didactic material in this case animals so that students learn more effectively by doing things. Theory and practice should go hand in hand so that the process is effective and so at the end of their studies the students come out with capacity to handle domestic animals and succeed as a professional.

In this year, another cohort of first-year students have already entered the livestock module, using the same methodology and learning techniques to learn in the field doing the work themselves. More species are being added to the livestock facility such as ducks and creole chickens. Again the aim is to get hands on experience with the subject matter taught in the livestock courses, so that the student leaves as an agroforestry engineer with practical experience in livestock management.

Cuando inició la carrera no se impartían cursos sobre animales domésticos y de acuerdo a la carrera agroforestal, que no es más que la integración de varios sistemas de producción, agrícola, forestal y pecuario, el estudiante al salir no tenía conocimientos pecuarios y la carrera como tal exigía esos conocimientos.

Después de varios años se vio la necesidad que se implementaran algunos cursos sobre ciencia animal, y hace tres años aproximadamente iniciaron a impartir cursos pecuarios (Módulo I avicultura y apicultura, módulo II Ovinos y caprinos y Zootecnia) en una forma teórica dentro de las aulas de la Universidad del Valle de Guatemala - altiplano, Sololá. A medida que se fueron dando las necesidades se pensó en iniciar con una granja de especies menores para que los estudiantes realizarán sus prácticas de manejo con las diferentes especies de animales, se tuvo la idea de construir una pequeña granja de animales donde los estudiantes serían los encargados del manejo, cuido, alimentación, llevar los controles de reproducción producción y comercialización de los productos y subproductos obtenidos en la granja.

No se contaba con materiales de construcción ni con recursos económicos, a medida que se fue madurando la idea se observó que dentro de las instalaciones se encontraban algunos materiales de construcción que ya no se utilizaban tales como madera, laminas, que eran materiales indispensables para construir las instalaciones mínimas para alojar a los animales.

Con la colaboración de los estudiantes y catedráticos se solicitaron a las autoridades de la UVG algunos materiales que ya no les daban uso y a partir de su autorización se inició con la construcción de las instalaciones.

De acuerdo a los conocimientos básicos impartidos en clase sobre la construcción de las instalaciones pecuarias los estudiantes aplicaron dichos conocimientos ya en la práctica, construyendo el piso, paredes, techos, instalaciones de agua y donde los estudiantes realizaron todas las actividades para la construcción del módulo pecuario.

Motivados los estudiantes que ya se tenían las instalaciones, colaboraron económicamente para la compra de animales de diferentes especies tales como: (conejos, gallinas ponedoras, pollo de engorde, cabras, cerdos, codornices) y fue así como hicieron realidad el proyecto.

Además se obtuvieron comederos, bebederos, jaulas, ponederos, teniendo ya las construcciones, especies de animales y equipo los estudiantes se organizaron para iniciar con las prácticas de manejo diariamente haciendo grupos de trabajo para atender a las diferente especies de animales.

Al iniciar la producción de huevos de gallina y codornices, carne de pollo, cerdo, se realizó la primera feria agropecuaria en las instalaciones de la UVG donde los estudiantes prepararon productos y subproductos para la venta (embutidos, chicharrones, carne de conejo, carnitas, carne de pollo, carne de cerdo, huevos de codorniz y gallina), participando padres de familia, personal de la universidad y visitantes en el consumo de alimentos.

El estudiante tuvo la oportunidad de realizar todo el proceso desde la compra de los animales pequeños hasta la comercialización del producto generando ganancias económicas, aprendizaje y experiencia en el proceso. Actualmente con ayuda de los estudiantes se sigue agrandando las instalaciones con recursos de reciclaje como también incrementado el número y especies de animales para lograr ser auto sostenible.

Dentro del proceso enseñanza - aprendizaje es de gran importancia utilizar técnicas y métodos adecuados para la enseñanza de la ciencia animal, contar con material didáctico en este caso animales para que el estudiante aprenda mejor haciendo las cosas ya que la teoría y la práctica deben de ir de la mano para que el proceso sea efectivo y así el estudiante al terminar sus estudios salga con capacidad y sea competente en el manejo de animales domésticos y tener éxito como profesional ya en el campo de acción.

En este año ha ingresado otra promoción de estudiantes que se encuentran en el primer semestre y ya se incorporaron al módulo pecuario, utilizando la misma metodología y técnicas de aprendizaje el de aprender en el campo haciendo el trabajo ellos mismos. Además, se están incrementado más especies como patos, gallinas criollas, donde se pretende lograr alcanzar los objetivos propuestos en los diferentes cursos que se imparten en la carrera sobre ciencias animales para que el estudiante salga como ingeniero con ciertos conocimientos agroforestales.

Ing. y Lic. Bayron René Mogollón

The Universal Language

by Jose Bernal

Teaching and Learning are universal! Language, culture, and country do not interfere with a well-designed teaching-learning model. As educators our goal is to impart and to facilitate learning; unfortunately, the major ingredient is empathy; and that sometimes comes at a high price.

The challenge to collaborate even within the confines of our own borders is of great concern, because to collaborate is to give away our precious secrets of the craft, the danger that the only edge we have, to earn recognition both at the student or professional level, maybe now in the hands of the competition.

Allowing ourselves to empathetically analyze the ways our fellow educators globally are trying to teach and solve their own educational challenges; is contrary to the way, our country is grieving over the way we have chosen to solve our political differences; this my fellow American educators provides us with the most myopic view of how the other side lives.

Someone once said that education is the "sharpest" sword! If we want to slow down or even stop the onslaught of migrants choosing the U.S. as their final destination! We must be willing to share educational strategies and meaningful ways, that can help them prepare their communities to provide for their own basic human needs. Hoping that their system will help them compete in a global society!

Although the level playing field is critically one-sided, our simple input and encouragement can be the difference between success and failure!

Case in point, the teaching model employed at the University Del Valle de Guatemala-Altiplano, Solala; includes two very important components. Empowerment and Relevancy!

The inclusion of livestock into their syllabus and the program change is very similar to what we in the states call the SAE. Most of you know the power that the SAE provides to our programs and most importantly to our students.

Once the students are able to own their learning, and are able to see the connection (relevance) to their own lives, teaching takes a different approach and learning is driven by the students. Skill development becomes infectious, motivation is the feeling of the day, excitement dominates schools, communities, regions, and countries. The expectations of all involved rise to a new level. I call that success!!!

Although the faculty at Altiplano may not be familiar with our model; the inclusion of empowerment, ownership, and relevancy provides their institution with a delivery system with precisely the same educational goals that we have for our programs.

The age and the cross-section of the students does not matter; and neither does the flexibility their faculty have. Once the program design is in place, we can collaborate with their faculty in a myriad of ways. We can establish a clearinghouse where we can share resources, ideas, even exchanges.

The purpose is to collaborate; the language should never be a reason not to participate and to contribute. The scarcity of their resources forces both the professors and the students to become very ingenious, and will find ways to translate materials in English to Spanish.

Jose Bernal
Agriscience Teacher
Pima Joint Education District
Tucson, Arizona

Get Involved in Global Food Security - Global Food Security Learning Laboratory

Learning happens best when authentic experience is involved! You can help provided financial resource to dedicated students who have a vision, have already invested "elbow grease" with what was immediately available and are on the precipice of something really cool....if they had a little bit of help.

When traveling abroad, it is always tempting to look for what's different, but we prefer to look for similarities. What we saw at Universidad del Valle Altiplano was enthusiastic, creative teachers of agriculture educating the next generation of leaders in agriculture.

Although the context is very unique, the passion for agriculture is the same. Resources are scarce, but we believe connecting the efforts of UVG to the caring individuals with shared interests will have a significant and long-lasting impact through the construction of a Global Food Security Learning Laboratory that will provide students hands-on learning opportunities for the improvement of agricultural practices in the area.

Last year the faculty and students saw a need for a hands-on learning laboratory and took matters into their own hands. They gained permission from administration to clear a plot of land on campus, and to recycle materials from an unused parking structure. They erected a modest structure (see photo above) to house small animals such as chickens, goats, pigs and rabbits. They also created a fence to keep predators out of the horticultural crops such as green beans, beets, carrots, potatoes and peas.

Please take a look at our GoFundMe fundraising campaign to learn more and contribute towards the expansion of this Global Food Security Learning Laboratory: https://tinyurl.com/UVGlearninglab

Don't hesitate to contact Daniel Foster at teachag@psu.edu with questions or if you would like to contribute in other ways.

Shared Professional Development for Agricultural Educators: #AgEd2Malaysia

by Melanie Miller Foster, Daniel Foster, Brad Kinsinger, and Nur Husna Wahid

In August 2018, twelve U.S. current and pre-service agricultural educators took off for Malaysia where they met up with ten pre-service Malaysian Living Skills educators. (In Malaysia, agriculture is taught as part of the Living Skills curriculum.) Over the next month the group, #AgEd2Malaysia, shared a series of professional development events that included school visits, co-teaching episodes, a host family stay, and farm and industry tours. And reflection, lots of reflection.

The group was funded by Fulbright-Hays, a grant program providing international experiences for K-12 educators through the United States Department of Education. The project was coordinated by members of the Global Teach Ag! Consortium: Penn State University, Universiti Teknologi Malaysia and Hawkeye Community College.

#AgEd2Malaysia participants were together in Malaysia for one month, sharing in all aspects of the program together. One thing that the project faculty were particularly interested in was to see the ways that the participants described what they were learning. After years of preparation leading up to this experience, what would participants learn?

No one can tell the story of their learning better than the learners themselves. Below we feature a series of quotes collected from participants at the end of the month-long experience.

Global Self-Awareness and Perspectives

Both U.S. and Malaysian participants shared that they learned new things about culture, religion and working through a language barrier. Over the course of the experience, participants expressed how much they learned about others, but also how much they learned about themselves.

"The most meaningful interactions between me and U.S. participants was about us or American culture. Talking about that makes me feel like I have been there before. A lot of new things that I learned and I just knew that there are some of my information that I know about the USA culture are totally wrong." – Fatin, University of Teknologi Malaysia Teacher Candidate

"These experiences have pushed me to peel back the layers of who I am and to reflect on my beliefs. Moving forward, I know that I will be more open-minded and patient with others. I hope that these behaviors will be reflected by my students. I am thankful to be more knowledgeable about different cultures & religions. I am excited to teach my students about global awareness lessons on empathy and also global agriculture. Overall, I just think that I will be able to provide a positive outlook towards people that are different from me." – Shelby, Ohio Agriscience Teacher

"As a teacher, I will take extra time to work with ELL students in my classes because I now understand how frustrating it is to have everything translated so I can understand." – Darla, Pennsylvania Agriscience Teacher

Getting Out of the Comfort Zone

One thing common to all participants, regardless of where they were from, is that the #AgEd2Malaysia experience called them out of their comfort zones. Whether it was riding a bike for the first time, building confidence to speak in a second language, or swimming under a waterfall when you actually don't know how to swim, all participants experienced the uncomfortable sensation of being out of their comfort zone.

"The most challenging moment is when we first met at the airport and I'm afraid to how I'm supposed to approach them for the first time." – Yazlin, University of Teknologi Malaysia Teacher Candidate

"Personally, I was very scared to fail at times, riding bikes, the waterfall experience, communicating and assimilating into the group. But as we step out of our comfort zone and tackle fears we grow and build new strengths." – Thomas, Penn State Agricultural Teacher Candidate

"The most meaningful interaction was when I started speak to them for the very first time and they accept me openly as a new friend. They helped me a lot when I faced difficulty especially when I don't understand them and gave positive encouragement." – Nina, University of Teknologi Malaysia Teacher Candidate

"Living with my host family at FELDA was challenging because of language barriers. I wanted so badly to talk with my host mom and grandma but felt helpless because we didn't speak the same language. Along those same lines, our first teaching experience was challenging because of the language barrier. I have never felt so helpless in the classroom." – Shelby, Ohio Agriscience Teacher

"To talk in front of public especially in English. This is because I don't have enough confidence. I also had a lot of challenges in understanding some words in English." – Nisah, University of Teknologi Malaysia Teacher Candidate

"Some of the most challenging moments of this trip were communicating with my host family at FELDA because I could not speak Malay. I had so much to tell and ask this family but felt guilty to bother Yazlin, my UTM roommate to translate my thoughts." – Darla, Pennsylvania Agriscience Teacher

Teaching Experience

Participants were divided into groups in order to design and teach agriculture-based lessons in several different secondary schools. Each teaching triad consisted of an experienced teacher, a U.S. pre-service candidate and a Malaysian pre-service candidate. For many of the teachers it was intimidating to think of teaching in a different context, one with a different set of classroom culture and expectations, and in a different language of instruction. To pre-service candidates, they added the fear of planning and teaching a lesson in an authentic context, many for the first time. Everyone had the opportunity to learn something new about teaching agriculture.

"The experience in preparing a lesson and teaching in a real situation was very valuable to me. This is something that will help me in preparing to become a teacher one day. We have to have experiences such as these in order to understand the challenges."- Ain, University of Teknologi

"For me, the most powerful learning was not just about agriculture. The thing that I learn in this program is about how to do a good lesson plan before you go to the classroom. This will really help me in the future when I become a teacher." – Suhana, University of Teknologi Malaysia Teacher Candidate

"I think my most powerful learning moment happened through the lesson planning process. This experience forced us to rely on our strengths as a team and to trust one another." – Shelby, Ohio Agriscience Teacher

"The most challenging moment for me is to teach for me the first time at the school. This is because not only I'm going to teach the students, who most of them does not used to foreign teacher, but it is also my first time teaching in a real class at school." – Yazlin, University of Teknologi Malaysia Teacher Candidate

When the learning happened

Over the years one of the most important things that we've learned is to give space for learning to happen. While our official schedule was packed full of tours and workshops, we recognize the importance of the learning that takes place in the off hours. Below participants share some of the places where the most learning happened.

"I learned the most when talking and having a sharing moment while on the bus. Exchanging stories and always learning something new unexpectedly. For instance, I learn from Darla how maple syrup is made, as she had an experience with the whole process back at her school. And it is also my first time knowing that maple syrup came from a maple tree." – Yazlin, University of Teknologi Malaysia Teacher Candidate

"My most meaningful connections with the UTM students were the nights spent in the dorms laughing socializing about our culture differences. Not knowing it then, but when I look back I recognize those high peaks of becoming lifelong colleagues, friends, and family." – Kristi, Iowa State Agricultural Teacher Candidate

"My most meaning interaction with a person with different culture is when I first time talk to Darla in the bus from the airport to UTM. She shares a lot about herself and that is my first time talk with other people in another

language. I will never forget this moment for the rest of my life. This is so meaningful for me to interact with people who are really different from people around me before." – Suhana, University of Teknologi Malaysia Teacher Candidate

"Sharing same room together. When they (U.S. friends) understand and respect our culture, especially at prayer time. Sharing our thoughts about our culture and religion." – Ain, University of Teknologi Malaysia Teacher Candidate

"The most meaningful interaction happened in FELDA when we were put together a room with a U.S. friend. It started a meaningful conversation about culture. We learned about differences and similarities." – Ali, University of Teknologi Malaysia Teacher Candidate

Empathy

Ultimately, one of the goals of #AgEd2Malaysia was for participants to build global competency. An important aspect of global competency is empathy, commonly thought of as the ability to put yourself in another person's shoes. When asked what they learned during #AgEd2Malaysia, many participants referenced that their sense of empathy had been activated in new and different ways.

"After this experience, I have more empathy for international students because I was the international student in Malaysia and can use that to help them feel more welcome in the U.S. whether that person is a student, future colleague, or fellow classmate." – Kaitlin, Penn State Agricultural Teacher Candidate

"I hope that I can lead others and my students by example in showing acceptance and empathy for cultures different than my own." – Jeanne, Pennsylvania Agriscience Teacher

"I will be more aware about other people thoughts and beliefs when making decisions in the future." – Yazlin, University of Teknologi Malaysia Teacher Candidate

"I've learned to accommodate for various levels of English language proficiency in a classroom and have a new outlook on the diverse needs of students in a classroom." – Darla, Pennsylvania Agriscience Teacher

One of the most surprising aspects of these statements is how much the U.S. and Malaysia participants learned in common. Both groups learned about the others' culture in a deep and authentic way. Both groups were scared to work through a language barrier, albeit different languages. Everyone had moments outside of their comfort zone. While one group traveled halfway across the world, and the other stayed in their home country, both groups evidenced important learning that would change their future teaching practice.

To learn more about the #AgEd2Malaysia experience, check out the experience blog at: https://sites.psu.edu/aged2malaysia/participant-perspectives/ and search for our group hashtag, #AgEd2Malaysia, on Twitter.

"I never thought that I can become the person I am now. So, for me, I realize I can accept every challenge ahead to gain new experience." – Fatin, University of Teknologi Malaysia Teacher Candidate

Melanie and Daniel collaborate in leading the Global Teach Ag! Initiative at Penn State. Melanie is with the College of Agricultural Sciences Office of International Programs and Daniel is with the department of Agricultural Economics, Sociology and Education

Brad Kinsinger, founder of the Global Agriculture Learning Center, Hawkeye Community College

Nur Husna Wahid, agricultural teacher educator at the Universiti Teknologi Malaysia

Serving Nelson Mandela's Legacy through Agricultural Education

by Michaela Clowser, Alex Smith, Luis Flores, Mahamane Cissé, Lauren Cline, Chris Eck, Craig E. Watters and M. Craig Edwards

"Young people are capable, when aroused, of bringing down the towers of oppression and raising the banners of freedom." –Nelson Mandela

Hosting a Mandela Washington Fellowship Institute (MWFI)

"The Mandela Washington Fellowship for Young African Leaders is the flagship program of the Young African Leaders Initiative (YALI)" (U.S. Department of State, n.d.a, para. 1). Oklahoma State University (OSU) hosted its first Institute cohort of 25 Mandela Fellows during the summer of 2017. OSU was again supported by the International Research and Exchanges Board (IREX), as funded by the U.S. Department of State, to provide a second Institute in 2018. During the 2018 Fellowship summer, OSU was one of 28 Institutes nationwide that included "700 outstanding young leaders from Sub-Saharan Africa [SSA]" (U.S. Department of State, n.d.b, para. 1).

Because of the Institute's emphasis on entrepreneurship, and for many participants in the context of agriculture and food, it was planned and delivered as a collaborative effort between OSU's Department of Agricultural Education, Communications, and Leadership, College of Agricultural Sciences and Natural Resources (CASNR) and its

Riata Center for Entrepreneurship of the Spears School of Business. Over two summers, OSU's Fellows hailed from 29 SSA nations. Most ranged in age from 25 to 35 and had business ventures involving production agriculture or in the value-addition stream providing food for domestic consumption and export. The 2018 Fellows included many who were also developing youth in and for the agriculture sectors of their respective nations, and the programs of some Fellows focused on STEM preparation and careers.

What Did We Do?

The Fellows participated in numerous presentations led by faculty members, entrepreneurs, and other citizens of the OSU/Stillwater community and Oklahoma more broadly. Other than topics on general entrepreneurship and business, the history and mission of land-grant institutions, agricultural education and extension in the United States, youth empowerment through agripreneurship, the U.S. approach to youth development in agriculture, including FFA and 4-H models, and preparation of agricultural educators in the U.S. were subjects discussed. To make these topics more experiential, field trips, shadowing, and service activities occurred to help the Fellows understand the U.S. approach to agricultural education for pre-college youth. Such involved touring Stillwater Public Schools' Agriculture Education/FFA Facility and learning about the SBAE program from its three educators; volunteering with several Oklahoma 4-H STEM programs, including Lego Robotics training as well as youth working with solar ovens and solar-powered cars; and presenting on their countries' agriculture and cultures during the annual Oklahoma 4-H Roundup (i.e., state 4-H leadership conference) held at OSU.

They also had a number of site visits to Oklahoma farms and agribusinesses as well as enterprise and job shadowing experiences appropriate for their entrepreneurial interests. For example, after a tour of OSU's Robert M. Kerr Food and Agricultural Products Center (FAPC), Richard Sati, a Fellow and potato producer, processor, and seller from Nigeria said: "This is what I wanted; this is what brought me here!" Other Ag-related tours included gardening and farming equipment dealers; a food processing equipment store; a vertically integrated, egg layer farm and

other family farms emphasizing sustainable practices to name a few of the Institutes' field-based learning experiences.

Saturdays during the Institutes were mostly reserved for cultural activities and excursions unique to Oklahoma, including visiting the Oklahoma City National Memorial and Museum and the National Cowboy and Western Heritage Museum in Oklahoma City as well as the Cherokee Heritage Center near Tahlequah, Oklahoma. These examples, respectively, of domestic terrorism, the American West, and social marginalization, including forced land resettlement while also struggling to preserve a group's cultural identity, resonated with many of the Fellows based on personal experiences in their home nations.

A Cornerstone of U.S. Agricultural Education – Leadership Development

The Fellows' completed a leadership development plan. The plans serve as blueprints and sources of accountability for the Fellows to return home and work as servant leaders in their organizations. They participated in leadership development workshops to clarify their visions, values, and goals as leaders. The Fellows studied the "Five Practices of Exemplary Leadership" found in Kouzes' and Posner's (2017) text, T*he Leadership Challenge*, to emphasize the importance of servant leadership in successful organizations. A three-workshop series focused the Fellows on creating leadership and personal vision statements, clarifying their personal core values, and establishing short- and long-term goals. Lauren Cline, a former FFA state officer and doctoral student in agricultural education at OSU, who led the workshop, shared her experience with the Fellows:

Leadership is global, and every organization, regardless of where they are located in the world, is yearning for servant, ethical leaders. By reflecting on their visions, values, and goals, the Fellows gained confidence in their ability to make significant impact as leaders within their organizations, communities, and beyond.

Collaboration with Agricultural Scientists – The OSU Greenseeder Hand Planter CASNR's Department of Plant and Soil Sciences was especially helpful to the Institutes. Its faculty members and students provided training on the OSU-developed Greenseeder mechanical hand planter as a way to reliably singulate seeds when planting, e.g., maize, the World's most abundant grain crop, while reducing farmers' seed-chemical exposure (OSU, 2017). Through their efforts, nine 2017 Fellows returned home with planters to use and to demonstrate for other farmers, and in 2018 all 25 Fellows were provided this precision agriculture tool. As a result, farmers' yields as well as their health stand to improve in SSA.

Voices of the Mandela Fellows

In the tradition of the best practices of agricultural education, the Institutes featured programming to develop the Fellows' leadership capacity and modeled service-learning principles to involve them in acts of community service while in the United States. Regarding their service-learning experiences with Stillwater's Habitat for Humanity ReStore, which included assisting with housing construction, the Fellows were amazed to realize that most of the local volunteers were senior citizens. Ousia Foli-Bebe, a STEM educator and 2018 Fellow from Togo said: "In Africa, people of their age don't work, they stay home." Ousia would later confess that the America he knew from home was different from the nation and society he experienced during OSU's MWFI, especially regarding volunteerism, service, and community spirit.

Maria Cabral, a 2018 Fellow, discussed why the Fellowship was beneficial to her as a leader and agribusiness woman in Mozambique. She does research and development and is a quality control manager for Baobab powder production, i.e., dried fruit powder of the Baobab tree indigenous to parts of SSA. Maria stated:

. . . I face gender equality issues, women are simply not allowed to work or make money and we like to hire as many women as we can and provide training for them. Another challenge is trying to export large, mass quantities to our desired markets in the U.S. and Europe. Many

foreign markets only want smaller quantities and right now we are using a middleman to ship our smaller quantities and it's not feasible for us.

Maria explained how the Fellowship had given her ideas to overcome these challenges and how the connections she made in Oklahoma will open new doors for her in the future. Her most beneficial takeaway came from meeting with a food scientist at OSU's FAPC. "When I met with Dr. Bowser he opened my eyes to some super practical ways to improve [the] quality of my product. I will use many of the new leadership skills and implement them with my team," said Maria.

Usman Lawan, a 2017 Fellow and leader of an agribusiness training center in Nigeria, wrote a thank you e-mail message to the owners of an egg layer operation after his visit to their three-generation, family farm.

We have learn[ed] so much during our visit ranging from your impeccable operations process to quality control, packaging, handling, branding and distribution. We are very happy that you were delighted to have us and shared so much information with us regarding your business. I am amazed at the wealth of knowledge and understanding of the business that Mathew [a 16-year-old grandson] displayed. This has particularly inspired me and the rest of the Fellows.

Another 2017 Fellow who participated in that learning experience also shared her view through an e-mail exchange:

As a female poultry farmer in Lesotho it is not always a straight forward path to accessing the resources one needs to succeed. . . . The MWF 6 week course at Oklahoma State University has transformed the overall outlook I had regarding agriculture. I [will] not only [re]focus the profitability of the business but [also] on how I can empower girls as young as primary [school] level on how to participate in agriculture. I learned a valuable lesson that we must reach them while they are still very young.

Finally, Mercy Kitomari, a 2018 Fellow and ice cream maker from Tanzania, repeated one of the Institute's consistent mantras when discussing her biggest takeaway from the Fellowship: "There's not national security without food security."

Why Should U.S. Agricultural Educators Do International Outreach?

OSU's Institute was a part of achieving Nelson Mandela's vision

for his home nation of South Africa, the African continent at large, and the entire world, i.e., peace, prosperity, as well as social and economic justice for all. To that aim, few would predict the likelihood of achieving a safe, secure, and peaceful world without sufficient food to feed an increasingly growing and hungry planet. U.S. agricultural education – school-based, informal, and university – is at the epicenter of this challenge and well-poised to play an essential role. This work can involve facilitating professional development experiences for agricultural leaders from lesser-developed countries, including educators of youth in and for their respective agriculture sectors. Is there a more qualified group of agricultural professionals to do this outreach and service than U.S. agricultural educators? Doubtful, and if not us, who?

Chris Eck, a former SBAE teacher from Florida and now a doctoral student in agricultural education, teacher education at OSU, who facilitated several of the Fellows' field trips, observed: "Providing [the Fellows] a chance to interact with these [U.S.] youth development programs is crucial for the MWF group, allowing them to discover possible implementation opportunities for their respective countries." The U.S. participants and institutions who provide such programs also stand to gain much in regard to increasing their global-mindedness and cross-cultural understanding – two sorely needed competencies in today's transnational and interdependent economy (Raczkoski, 2018). By undertaking such experiences, we all stand to learn more and to learn better by doing and serving!

"As long as poverty, injustice and gross inequality persist in our world, none of us can truly rest."

–Nelson Mandela

References

Kouzes, J. M., & Posner, B. Z. (2017). The leadership challenge: How to make extraordinary things happen in organizations (sixth edition). Hoboken, NJ: John Wiley & Sons, Inc.

Oklahoma State University (OSU). (2017). OSU hand planter (Greenseeder) pictures, developing world. Retrieved from http://nue.okstate.edu/Hand_Planter/Hand_ PlanterDevelopingWorld.htm

Raczkoski, B. M. (2018). Examining predictors of student motivation to enroll in a study abroad course from a perceived costs perspective. (Unpublished doctoral dissertation, Oklahoma State University, Stillwater.)

U.S. Department of State. (n.d.a). Mandela Washington Fellowship for Young African Leaders. Bureau of

Educational and Cultural Affairs Exchange Programs. Retrieved from https://eca.state.gov/mandela-washington-fellowship

U.S. Department of State. (n.d.b). Mandela Washington Fellowship for Young African Leaders, at-a-glance. Bureau of Educational and Cultural Affairs Exchange Programs. Retrieved from https://yali.state.gov/mwf/

Michaela Clowser, M.S. graduate student in international agriculture, Oklahoma State University

Alex Smith, M.S. graduate of international agriculture, Oklahoma State University

Luis Flores, Doctoral student in agricultural education, Oklahoma State University

Mahamane Cissé, Doctoral student in agricultural education, Oklahoma State University

Lauren Cline, Doctoral student in agricultural education, Oklahoma State University

Chris Eck, Doctoral student in agricultural education,Oklahoma State University

Craig E. Watters, Ph.D.
Director, Institute for Global Social Entrepreneurship, Chair, International Entrepreneurship,
Oklahoma State University

M. Craig Edwards, Ph.D.
Professor of Agricultural Education & Coordinator of Graduate Studies,
Oklahoma State University

Global Learning in Agriculture

#GLAG19

Cultivating Empathy in a Global World

WHEN: Live Event on Friday, February 1st

WHO: Best practices shared by formal and non-formal agricultural educators

V.I.P. Guest: Mr. Roger Thurow

Roger Thurow was a reporter for The Wall Street Journal for 30 years, 20 of them as a foreign correspondent based in Europe and Africa. His coverage of global affairs spanned the Cold War and the fall of communism in eastern Europe, the release of Nelson Mandela, the end of apartheid, the wars in the former Yugoslavia and the humanitarian crises of the first decade of this century. In 2003, he and Journal colleague Scott Kilman wrote a series of stories on famine in Africa that was a finalist for the Pulitzer Prize in International Reporting. Their reporting on humanitarian and development issues was also honored by the United Nations. Thurow and Kilman are authors of the book, ENOUGH: Why the World's Poorest Starve in an Age of Plenty. He has also published two additional books: 2012 – "The Last Hunger Season: A Year in an African Farm Community on the Brink of Change" and 2016-"The First 1,000 Days: A Crucial Time for Mothers and Children- And the World"

ACTION ITEMS:

- Visit our website https://sites.psu.edu/glag/. ***SO MUCH FUN INFORMATION!***
- Register NOW!
- 100 Conference-in-a-Box/All-Access Registrations Available ($50); unlimited digital registrations ($25)
- Share with your institutions and state agricultural education partner (school-based, extension, etc.) about engaging!