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THE ART OF TEACHING

You are the Artist - The Classroom is Your Canvas!

By Jamie Cano

Teaching, like farming, is a cooperative art which helps nature do what it can do itself – though not as well without some intervention. We have all learned many things without the aid of a teacher. Some exceptional individuals have acquired wide learning and deep insight with very little formal schooling. But for most of us, the process of learning is made more certain and less painful when we have a teacher's input. The teacher's method of guidance makes our learning easier and more effective.

One basic aspect of teaching that is not found in farming, is farming's over dependence on nature. Teaching always involves a relationship between the mind of one person and the mind of another. The teacher is not merely a talking book, or an animated CD which is being broadcasted to an unknown audience. The teacher enters into a dialogue with an individual student or a group of students. This dialogue goes far beyond mere "talk," for a good deal of what is taught is transmitted almost unconsciously in the personal interchange between the teacher and the student. We might be able to get by with books, reference manuals, and computers, if it were not for the intangible element of personal interchange, which is present in every good teacher – student relationship.

Thus, without doubt, teaching is a two-way relationship. The teacher gives, and the student receives. Likewise, the student is a "disciple;" that is, the student accepts and follows the discipline prescribed by the teacher for the development of his or her mind. This is not a passive submission by the stu-

dent or an arbitrary authority by the teacher. Teaching is an active appropriation by the student of the directions indicated by the teacher. The student uses a teacher just as a child uses his or her parents, as a means of attaining maturity and independence. The recalcitrant student, who spurns a teacher's help, is most often wasteful and self-destructive.

Viewing teaching through a different set of lenses, is teaching an art or a craft? Art and craft are closely related terms, craft applying to a lesser skill or emphasizing a technique, while art refers to a higher degree of creativity or creative achievements lying beyond technique. Whereas I accept dimensions of teaching that go beyond acquiring technical skills, I have some reservations about dwelling on teaching as only an art. I fear that such identification may delude teachers into thinking there is no craft to teaching, or that paying attention to craft will compromise a teacher's aspirations to the heights of art.

However, the more we rely on artistic interpretations or on old stories and accounts about teaching, the more teachers will fall victim to fantasy, wit, and romantic rhetoric, and the more teachers will depend on hearsay and conjecture in evaluating competency, rather than on science or objective data. On the other hand, the more we rely on the scientific interpretation of teaching, the more we overlook those commonsense and spontaneous processes of teaching and the sounds, smells, and visual flavor of the classroom. What sometimes occurs is that the educationally significant, but difficult to measure or observe, is replaced by what is insignificant, but comparatively easy to measure and observe.

Thus, it is necessary to blend artistic impressions and relevant stories about teaching, because good teaching involves emotions and feelings, with objective observations and measurements and precise language. There is nothing wrong with considering good teaching to be an art, but we must also consider good teaching to lend itself to a prescriptive science or practice. Good teaching is likened to good theater, and a good teacher is likened to a good actor. Sometimes practitioners inform us that the best teachers are "actors" and "hams," and excel at improvisation and imagery. Good teachers have few, or no prescriptive formulas, and allow for adaptation to unexpected events and the demands of reality.

In conclusion, it is believed that true knowledge of teaching is achieved by practice and experience in the classroom. It is critically important to recognize that much of teaching deals with feelings and emotions, what many call the "art of teaching." The science of teaching can be taught; the art of teaching is based more on personality. Unleash your artistic abilities!



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The Artist in Us

By Robert Torres

The whole art of teaching is only the art of awakening the natural curiosity of young minds for the purpose of satisfying it afterwards.
Anatole France

Having grown up on a family sheep and cattle ranch in a small town in northern New Mexico, I never knew I would become an artist. Inherent to my upbringing was my exposure to many forms of art. Taos is considered an artist colony where music, dance, drama, poetry, sculpture, film and art flourish. Set in the high desert at the foot of the Sangre de Cristo Mountains, this hundred-year old art colony is filled with world-class galleries and museums where thousands journey annually. Some well known artists such as Georgia O’Keeffe and R.G Gorman inspire visitors with their spirit as with the excellence of their southwestern art.

As an educator, I’ve never really considered myself an artist, per se. But growing up in an art colony may have affected me after all, or did it?

This issue is dedicated to those teacher skills and behaviors that, when mixed just right, become artful!

As I reflect on the “art of teaching,” I begin to wonder if in fact I have become an artist. Teaching, after all, is said to be an art. Teaching in an artful manner has the same power to inspire our students as does the work of Georgia O’Keeffe and R.G Gorman inspire the art connoisseur. Perhaps the only difference is that we don’t display our work on canvas and hang it in a museum with a price tag few can afford.

So what makes teaching an art? In my humble estimation, artful teaching translates into...teacher passion...a type of kinetic art. A canvas artist would not be successful if he/she did not display his/her interpretations without passion and meaning. Each painting, poem, and/or music piece becomes a reflection of the person. Similarly, teachers must teach with passion. Having passion in what we do in the classroom means doing everything within our means to interpret the instructional process in such ways that learning comes alive and inspires students...that we put ourselves into our lessons! It means caring about students. It means teaching with creativity. It means looking for fresh, novel means of impacting students’ lives. It means juggling many teacher factors in a creative mix that can not be duplicated by another. It means instruction that is bended in a unique fashion that, when put together, it multiplies exponentially. It means teaching can and should be artful!

Can the art of teaching be taught? Sure. Can you or I be taught to reproduce the work of Georgia O’Keeffe and R.G Gorman? Probably not! However, as with any art class, art is an interpretation, as is teaching. How you choose to interpret teaching is based upon the mix media of your experiences

and skills. It can not be reproduced by another.

Pedagogy is defined as the science and art of teaching. The January - February 2005 issue of *The Agricultural Education Magazine* focused on the “Science of Teaching” as a theme. This issue is dedicated to those teacher skills and behaviors that, when mixed just right, become artful...the “Art of Teaching.” In this issue, you’ll read about how these authors interpret the teaching process. You’ll read about ideas they share for meaningful classroom practice. In essence, these authors provide you with a paint brush and a variety of colors in hierarchic proportions. The intent is not to duplicate what the authors do; rather the reader should interpret and consider applying the tools in meaningful, eclectic ways. It is up to you to create your own masterpiece...in the classroom. Enjoy!



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What Matters Most is Teaching From the Heart

By Molly Aschenbrenner

One short sentence. “A road trip in the ag truck.” This sentence has changed the lives of many students, and it has changed this article. Recently, I was traveling home from a FFA Career Development Event (CDE), our State Finals as a matter of fact, when my entire premise for this article changed. The second place red ribbon sat there, stinging all the way home. This same team had been second, third and now second again in three consecutive years. Nine points made us so close, and yet so far away.... again! My students were disappointed and I could see in their eyes the mathematical computations begin. “If only I had one more question on the exam correct, we might have....” I was disappointed too, but it was my job to point out how hard they worked, the memories they made and so many other things we as agriculture teachers do after this type of event. I made sure they understood I was disappointed in the outcome, but I could not be disappointed with their efforts. In my head, I was thinking, “I can decorate an entire room for Valentines Day with all of these red ribbons!” Comparatively, in my heart, I felt the sadness of a senior facing their final contest. With a silent sigh, I thought ahead to Monday and how we would approach this “learning experience” in class. That is where this article took a turn. As agriculture teachers, we know we impact student learning. Usually, we reflect on CDE’s and how they enable us to enhance student learning outside of the classroom. I will not argue with this point. However, on a long drive home from one of these events, I may have

changed my opinion of the importance of CDE’s. No, it was not due to the color of the banner! I began thinking about how we teach and realized Monday morning in the classroom will be a continuation of the CDE on my part. I will stand in front of my classroom of eleven years not merely as their teacher, I will stand there as their coach. Simple philosophy, I know, but I believe this is how we as agriculture teachers impact student learning.

Coaching

If you think of the most important person who impacted you and served as a coach in your life, who comes to mind? What are the qualities of that person and how did their philosophy of coaching change the way you performed? Usually, we think of a coach as an essential component of sports at all levels. I happen to appreciate sports and know there are different types of coaches. A ‘player’s coach’ is one who can motivate their

team to perform because they are well-liked by the players. A ‘coaches coach’ motivates by creating an atmosphere where their team is not willing, nor allowed, to deviate from the coach’s perspective. We can argue about which is more effective, however, the importance of a strong and successful coach cannot be underestimated. By definition, coaching means we modify behavior, improve performance and teach qualities, both tangible and intangible. Most of us would agree the lessons our favorite coaches left imprinted on our lives are those that went far beyond the field or arena. Of course agriculture teachers know the definition of coaching! Those who coach judging teams, or CDE’s, understand the philosophy of coaching. We can apply these same standards of coaching to our classrooms. Most outstanding coaches are also outstanding teachers because they use the same philosophies inside the classroom. On any given day, you will find agriculture teachers encouraging, correcting, and demonstrat-

September - October 2005 Issue

Theme: The Resources for Teaching

This issue will look at the resources available for teachers. The previous issues for 2005 addressed the science of teaching, the mechanics of teaching, the art of teaching, and the assessment of teaching and learning. This issue will incorporate information on resources from each of the prior theme issues.

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ing skills inside a classroom environment. Yes, we teach life skills inside those four walls just as we do at the pavilion or in the field. However, it is more than that; our coaching philosophy towards teaching is perhaps the most important way we can impact learning for our students. Through this philosophy we are able to demonstrate compassion and caring while maintaining our commitment to content.

Compassion and Caring

Recently, I interviewed twenty-five of my senior students. I asked them to explain how teachers influence the learning process. I must admit, I expected the same sterile answers about liking teachers who give easy assignments or those who allow extra-credit. Our students are much more intuitive than I would have imagined. For all of the time we have spent outlining standards and curriculum development, my students suggested teachers impact learning by *who* they are, not *what* they teach. Students want teachers to make the curriculum ‘real’ for them and tie it into their everyday life. More than anything, they believe good teachers are those who are passionate about their subject and simply love to teach! Students appreciate teachers who care about them personally and know about their lives. They want teachers who praise positive student behavior. Our students believe teachers impact student learning by respecting students and valuing their opinions. They want us to be honest when we make a mistake and allow them the grace to make a few of their own. We can impact the learning process for our students by simply illustrating we care about their lives and showing compassion for them when needed. We have so many opportunities to demonstrate the type of caring

and compassion our students’ desire. Whether it is after that disappointing loss in the show ring, or the opportunity to coordinate a coat drive for needy children in our communities, we demonstrate these attributes outside the classroom. Make no mistake, our students are watching and they will carry the message we teach, or fail to teach, back into the classroom. We may be the only individual in the lives of our students who will challenge them to develop character. Our students will learn more from the actions of their coaches than from our words!

Ultimately, young people feel they are most impacted by teachers who illustrate care and compassion to their students. This is what we do best in agricultural education! This is our area to shine!

Content

If we are going to start singing, we had better know the tune. If we are going to invite someone into our classroom to see how agriculture education can change lives, we had better be prepared to answer their questions. Like it or not, content standards and standardized test results will be there. Can we compare our ag biology class to the scores of the regular biology class taught across campus? Can our students compare their knowledge of supply and demand to those outside the ag economics classroom? We should if we receive comparable credit! Occasionally good teachers can get caught up in the life of ag teaching. There are pigs to weigh, speeches to critique, and judging practices, not to mention the pile of paperwork on your desk. Somehow, we manage to teach five or six classes with multiple preps. When we need time the most, it seems to be elusive. It is during these moments our

students watch how we coach our ‘team’ in the classroom. We need to remember to coach our student through important content each time they enter our classroom. Further, agriculture education requires more than a textbook and high definition television screen. Students must be engaged in the learning process and understand how learning something new can or will impact their lives...today! We must make the content real for our students. I am a big fan of capturing the attention of my students in odd ways. I tried to emulate those ideas I saw in college. Tried. I cannot do a magic trick to save my life! I tried to learn from my own teacher educators, Dr. Scott Vernon and Dr. Joe Sabol, (retired), both of whom did great magic tricks in the classrooms of Cal Poly, San Luis Obispo. My mind is just too simple. But the concept is important. When we offer something unusual, we impact the learning process. For example, teaching economics and the law of diminishing returns may forever be tied to peppermint patties if candy is related to satisfaction. It is not rocket science, but it can work! However, a magic trick is just a trick unless it becomes linked to knowledge. We must connect the ‘activity’ to the heart of our lesson. Knowing the content area is obviously essential, but we cannot forget to ‘coach’ our students through the information!

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**HEART:
DO WE ALL HAVE IT?**

Being Friendly.....Who Cares?

By Colleen Griswold and
Shane Robinson

Pop quiz! Take out a sheet of paper and number 1-5. List 5 ways in which you would describe an agriculture teacher? Got your answers? Chances are, most of the responses are similar in some degree and quite different in others. There are many ways in which we can describe agriculture teachers. Descriptive words such as motivated, hard-nosed, disciplinarian and overachiever come to mind and are probably the most common. What about the word “caring?” Was it on your list? Other synonymous terms such as veterinarian, mechanic, coach, role model, and FFA Advisor are also often thought of when describing agriculture teachers. But what about friend? Did you list “friend” as one of your top five? Is “friend” a word that we commonly think of when reflecting on the duties, characteristics, or attributes of an agriculture teacher? Is it even a term we want to have associated with us as agriculture teachers? Most agriculture teachers do care and are friends with their students whether they recognize it as such or not. The word “friend” is defined in the Webster Dictionary as a person who supports another. Does this not describe agriculture teachers?

It has often been said that “people don’t care how much you know until they know how much you care.” If this is true, then agriculture teachers need to make a conscious effort to befriend their students by building relationships with them and becoming positive influences in their lives. Being a friend and caring about students is not to be confused with be-

coming a “pal” to students. It is obvious that a high level of professionalism needs to be maintained whenever teachers and students interact. However, in today’s society where positive role models are few and far between, it is imperative that agriculture teachers step up to the challenge. It is important that agriculture teachers care enough about their students to do whatever is needed to build positive relationships with them. In his book titled, “The Power of Positive Teaching” (p. 8), McCormick states that “effective teachers have strong, positive feelings for students and are not afraid to demonstrate these feelings; they show the students that they ‘love’ them in a platonic manner. These teachers like students. They respect students. These teachers create an atmosphere of caring about students.”

Being a caring teacher is not only essential to the success of the student but is also essential in having a solid working relationship with everyone the teacher encounters. The authors discuss the caring teacher in three major areas; The Caring Teacher and the School Faculty, The Caring Teacher and the Student, and The Caring Teacher and the Parents.

The Caring Teacher and the School Faculty

Most agricultural education facilities on campus are located in a separate building from the rest of the school. While this has its advantages, it certainly has its disadvantages as well. For instance, it is very tempting to become totally isolated from the rest of the school by remaining in the agriculture building at all times. By doing this, agriculture teachers do a disservice to their colleagues. How is the best way

to handle this problem?

1. Get out of the building! Make an effort to walk the halls and visit with other teachers. Seeing and visiting with other teachers not only aids in informing other faculty members of what is going on in the agriculture arena, it also gives agriculture teachers the opportunity to visit about some of their students and find out how they are doing in respective classes. Being a caring teacher means taking an interest in the student. Checking on students progress in other courses will only help to strengthen the bond shared between the agriculture teacher and other faculty members.

2. Integrate Courses. The relevancy of the secondary agriculture program may depend on whether or not agriculture teachers have the ability to integrate other courses into their curriculum. With the “No Child Left Behind” Act heading full steam ahead, the President’s goal is to raise Math and Science scores across the board. What better way for agriculture teachers to get involved than to communicate with Math and Science teachers and brainstorm ways to collaborate and integrate course content.

The Caring Teacher and the Student

As agriculture teachers, we have a unique opportunity to be greatly involved in our students’ lives. Agriculture teachers spend more time outside of the classroom with students than any other teacher and many times more than any other adult in their lives. Agriculture teachers must use this time to their advantage to influence the lives of the students and build the relationship. In what ways can this relation-

ship be developed?

1. Be involved in students' lives!

If you want to build a relationship with a student as a caring teacher, care about what they care about. Going to a basketball game, a chess tournament, or the National Honor Society induction will impact students. The role of a teacher, often viewed more as a disciplinarian, is viewed also as a fan and supporter.

**In the end,
agricultural
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2. Take advantage of SAE visits. SAE visits will add a new dimension to the student-teacher relationship. These visits allow the agriculture teacher to witness the students' home lives, which can be very insightful. Students need the assurance someone cares how they turn out. They also need direction for their future.

3. Be the best agricultural educator. Being the best at your job will show students you care. Students may not always know the time you put into your job, but they will appreciate it, if they are the focus. According to Rosenshine and Furst (1977), being the best means using variety and enthusiasm in your classroom. Try out the different e-moments promoted by the National FFA and see what works for your students. Being the best means

giving of your time in order for students to succeed.

When you give of your time and of yourself to build relationships with your students, you will eventually see the results. Do not become discouraged by other teachers or by the lack of immediate results. Think about the story of the old man throwing back each starfish. A young person asked him why he was wasting his time on the starfish that the waves were washing right back to the beach. As the old man reached down and threw back the starfish, he said the young man might be right, but it did matter to the one he threw back. You do not know how far your influence can reach.

The Caring Teacher and the Parents

As agriculture educators strive to assist students, another group of individuals must not be forgotten in the formula – parents. Parents are one of the most dynamic and unpredictable groups you will encounter. Here are a few tips to make the best and most lasting impression on one of your greatest critics.

1. Be there. In the same way relationships are built with students, relationships are also built with parents through participation. Go to the ballgames, be involved with the church youth group, or volunteer as a 4-H project leaders to become acquainted with your students parents. Be available and prompt with parent-teacher conferences and emails.

2. Educate the parents. How many of your parents know the activities you do in your classroom or in your chapter? If the only time students discuss agriculture or the FFA with their parents is about dues or jacket money or fruit sells, all the parents see of the organization is money going out. What

are you putting into their child? It is your job to educate parents on the leadership aspect of the FFA. Parents can be a tremendous asset or a constant battle. It is up to you to win them over by educating them on the program and by demonstrating your commitment to their children.

Final Thoughts...

In the end, agricultural education instructors wear many hats. However, for all the students we encounter, we are more than just a teacher. Some students see the agricultural education instructor more than they see their own parents. We have a great opportunity to have an incredible impact on a student's life and the choices they make. It is vital that we take a long, hard look at what we are doing inside the classroom and out and that we extend ourselves as caring teachers to all our students.

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The Art of Creating Interest

By Erica Thieman and
Tracy Kitchel

For many people, art can seem very abstract. To one person a piece of work can be trash... to another, a treasure. No matter how art is interpreted, it is still organized in some kind of fashion. Paintings can be classified by eras—impressionist, baroque, etc. Music can be classified by genre - pop, classical, rock, R&B, etc. In discussing the art of creating interest, it is difficult to identify a scientific theory on how to create interest for every situation. Painters work with the variances in the materials they are using, from the properties of the paint to the texture of the canvass. Musicians work with tones, cords, and rhythm to produce their art. Similarly, teachers work with a number of variables such as the personality of the students, the situation or context of the class, and the interest level of the students in creating the art of learning.

Methods for creating interest cannot fit into a “one size fits all” category. Just like knowing which genre of music goes with what setting, as a teacher, you should select a proper way to create interest for the right situation. For example, classical music may not be the proper genre for most five year old’s birthday parties - no matter what the piece is. Creating interest that is designed to only grab the attention of the learners, when the learners are already attentive, may be a poor teaching choice. In this article, the authors discuss different types or ways of creating interest and the “right and wrong” places to exhibit your art of creating interest. It is expected that you take your own artistic twists on

the ideas and examples provided. Table 1 summarizes the proceeding content.

Grabbing Attention

This approach of creating interest focuses on learners merely paying attention to a topic in which they have little personal connection. *Grabbing Attention* involves high energy or engagement. This approach works well with learners who do not have a natural interest in paying attention. Learners do not need much or any prior knowledge. Caution should be exercised when using *Grabbing Attention* as it is easy for learners to disconnect the *Grabbing Attention* activity with the content.

An example of *Grabbing Attention* can be seen in the oxy-acetylene balloon demonstration. This is where the teacher fills three balloons – one balloon with oxygen, one with acetylene, and one with the mix of both gases – and eventually ignites each balloon to show the differences in combustion among the gases. (Note: The authors do not recommend doing this, but alas we know it’s done!) There are two ways to approach this activity – one as a *Grabbing Attention* approach and one as a demonstration on the dangers of poorly handling oxy-acetylene equipment. When using this demonstration to create interest, it is done at the beginning of the unit (prior to any instruction) to make the point that paying attention to the content of the oxy-acetylene unit is important to learner safety. When used as a demonstration to supplement instruction, the teacher connects the prior knowledge to students. Therefore, when the students watch the demonstration, they understand what’s going on. One demonstration is not necessarily better than

the other; they just have two different objectives.

Qualifying Questions

When creating interest using *Qualifying Questions*, learners discover how the unit relates directly to their everyday lives. Although the learners could be told the importance by the teacher, discovery is a more meaningful (and artistic) way of creating interest. Discovery can be initiated through Socratic dialogue between teacher and learners, through asking a series of questions designed to lead students to a specific discovery. These questions require the students to become actively involved in the interest approach. Therefore, some degree of prior interest level and knowledge is helpful to facilitate this approach.

An example of *Qualifying Questions* is a Food Science lesson dealing with food deterioration to lead to the discovery of what causes food deterioration. No discussion needs to follow the questions immediately. The discussion will occur within the lesson, therefore keeping the students’ interest piqued to find the explanations behind these answers. Through using a “What, Why and How” format for questioning, the teacher is able to engage learners in higher order thinking skills in just the interest approach.

- Question #1: “Would you choose to eat a banana or a steak, if both foods were left on the counter for a week?”

- Question #2: “Why would you not choose the steak?”

- Question #3: “Why does the

meat look like that after a week?”

· Question #4: “How is it that the banana is ok to eat, but the meat is not?”

Building Bridges

When creating interest by *Building Bridges*, the teacher is trying to get the learners to transfer lessons taught in an activity to the current content. In *Building Bridges*, the teacher will utilize an attention-grabbing activity that seems unrelated. After the activity, the teacher debriefs the activity, making links to the content at hand. Debriefing the transfer activity is more important than the activity in this instance.

In teaching judging reasons for ranking and placing animals, a teacher may set out four cans of pop and have the learners discuss their favorite drinks in rank order. Learners not only discuss their ranking, but they must also explain why certain drinks are better than others. In getting learners interested in applying (transferring) those same skills to judging livestock (or whatever species), the teacher discusses with the learners what they did

in arguing and making cases for their favorite soft drink.

In the Moment

Experience can be the best teacher – or, at the least, the best way to get learners interested. When learners have little to no prior knowledge or interest in the content, then the *In the Moment* approach may be helpful. Role playing or mock interviews may be common activities involved in this approach. This method is effectively used when the content does not directly affect the daily lives of the learners, however it is still information that they need for further understanding of a concept or larger construct.

The following example of *In the Moment* can be used when working on a Dairy Production lesson of an Animal Science unit. The teacher arranges the tables or desks in a herringbone pattern to mimic that of an actual working parlor. The teacher could even dress the part of the milker by throwing on a pair of overalls. When the learners enter the classroom, the teacher puts them all in the designated “holding pen” and then release them one-by-one to go to their appropriate

“stanchions” (the desks or tables).

Summary

Like any art forms, there is cross-over from era to era or genre to genre. One single interest approach may fall under more than one category. The question you must ask yourself is – does the approach match the situation? Or like an artist would ask, does my art fit my audience and occasion? Keep in mind that every artist is different and unique; therefore different styles and types of art will fit different artists. A teacher may be a master with oil paint, or *Building Bridges*, while another will be more comfortable and masterful with watercolor paints, or *Qualifying Questions*. However, it is up to you as an educator, to find what suits you best. The classroom is your canvass, now go paint an interesting masterpiece!

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Table 1

Summary of Ways to Create Interest

Interest Genre	Student’s Prior Interest Level	Student’s Prior Knowledge Level	Classroom Atmosphere
Grabbing Attention	Low	None to Low	High Energy Throughout
Qualifying Questions	Somewhat	Low to Moderate	Reflective Throughout
Building Bridges	Moderate	Moderate	High Energy, then Reflective
In the Moment	None to Low	None to Low	High Energy Throughout

Inviting Students to the Active Learning Process

By Doug Kueker

In his book, *The Courage to Teach*, Parker Palmer asserts that good teachers share one trait, “they are truly present in the classroom, deeply engaged with their students and their subject” (Palmer, 1998). The same could be said for active learning in the classroom. Active learning occurs when students are truly present in the classroom and deeply engaged with the subject matter. However, as practitioners we know that all students may not do this without support. So then, what strategies can we as teachers employ to create an environment that invites this level of student presence and deep involvement? Inviting students to be present as active learners requires more than using a variety of “active learning strategies”. The art of active learning requires a holistic approach - a strategy where teachers balance engagement with a meaningful classroom dialogue and adequate teacher support in encouraging the transfer of responsibility for learning.

We are blessed, in agricultural education, to teach in a context rich subject area where applications to the real world are plentiful and hands-on, engaging classroom activities abound. However, we cannot rest assured that active learning occurs simply by merit of engaging students in activity and telling them about all of the applications. Active learning, even in the agricultural education classroom, requires adoption of an *approach*. As you read this article consider your approach to inviting students as participants in the active learning process.

To identify an approach one must begin with reviewing the learning pro-

cess. Learning is not a simple process of adding knowledge into the student’s brain; instead it is an active process where the learner is taking information from the environment and constructing personal interpretation and meaning (Good & Brophy, 1994; Phillips, 1995). Students create links between prior knowledge and new concepts and make conceptual knowledge meaningful by using it to explain or explore new situations (Roth, 1990). Learning then is understood to be an individualized process where students must integrate new information while restructuring prior knowledge on their own (Case, 1993). This kind of learning is complex and requires a great deal of cognitive work by the learner (Roth, 1990). An artful active learning approach will engage students and then support their cognitive involvement in this learning process.

It is important, at this juncture, to distinguish between engagement and cognitive involvement. Involvement differs from engagement in its focus. During involvement focus is not on actively “doing” instead on the quality of the cognitive experience during learning (Reed and Schallert, 1997). Many common active learning strategies focus on getting student engaged; however neglect getting students cognitively involved in the experience. Take for instance; questioning techniques where a teacher initiates with a question, students respond, and then teachers evaluate the response as correct or incorrect. While engaging in nature, this type of questioning does not support students’ involvement in learning. Other common strategies follow suit when they are used in a way that the teacher assumes a preeminent role in the learning process. Engaging strategies like, checking for under-

standing, pre-developed mnemonics and models, hands-on activities and lab demonstrations can be a vehicle for beginning the active learning process. However they are insufficient to support cognitive involvement required to integrate new information with prior knowledge (Brown, Collins & Duguid, 1989).

Follow-up and support from the teacher after engaging students become the balancing components for encouraging the active learning process. Two themes from scaffolded instruction literature provide the rest of the approach needed to encourage students’ cognitive involvement: negotiating a meaningful whole-classroom dialogue and providing for transfer of responsibility through appropriate and meaningful teacher support during learning (Meyer, 1993).

Negotiating a Meaningful Whole-Class Dialogue.

Whole-classroom dialogue following the use of an engaging strategy provides a forum where students actively begin to make the content meaningful. Palmer (1998) speaks of the need for students to engage in an authentic dialogue with one another in order to learn; “Learning does not happen when students are unable to express ideas, notions, confusions, ignorance and even prejudices” (p.75). According to literature on scaffolded instruction fostering a meaningful dialogue serves two purposes: 1) negotiating deeper understanding of concepts and 2) transferring responsibility for the learning to students (Meyer, 1993). Characteristics of dialogue from scaffolded instruction literature such as; classroom talk where the teacher doesn’t respond every other turn; stu-

dent initiated discussion and evaluation of responses; integrating student comments and contributions into the ongoing dialogue all provide a model that breaks away from the traditional classroom discussion (Meyer, 1993).

There are several strategies for fostering this critical follow-up piece in the active learning process. The following section captures each strategy followed by examples of language that would reflect its implementation.

Shift from telling answers to asking students the right questions to help them evaluate

■ “How do you know this model is true?”

■ “What personal examples have you encountered to support the your position?”

■ “Why is this important to us now? In the future?”

■ “How did you arrive at your conclusion?”

Become a mediator encouraging student-to-student questioning, summarizing, application, evaluation, and analyzing

■ “Thanks for identifying those characteristics on egg quality. Who has questions for Sara to help us clarify any of those characteristics?”

■ “Who can rephrase what Steven just shared and repeat it back to him? Did they capture everything you had in there Steve?”

■ “Sam where would Kim’s strategy be useful?”

■ “Let’s bring this all together, who can summarize for the group the

strategies we have discussed to solve this problem? Thanks for volunteering Sara, who can write these strategies on the transparency while Sara summarizes? Thanks Janelle!”

■ “Mark, that’s a great point to add clarity to Stacy’s strategy? Who can tell Mark why this is a great point?”

■ “Excellent questions Travis. Let’s discuss the answers; restate your first question - only this time let’s let Mark respond first since it was related to his strategy.”

Integrate student contributions into future classroom dialogue

■ “A few weeks ago, Sara summarized three strategies for us to use when evaluating the suitability of a land plot for crop production. Who can remember Sara’s strategies? *Listen and list them as students recall.* After you’ve had a few weeks to practice using them, let’s evaluate those strategies. What were the pros and cons of this first strategy?”

■ “Steve how did you arrive at your calculation of the logs we can get

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from the tree in this problem? *Steve shares.* Did anyone else use Steve’s strategy? Who came up with a different strategy?”

Providing Support in Transferring Responsibility

The strategies we use to support students as they begin to make content meaningful must create an environment that encourages and supports transfer of responsibility. Transferring responsibility refers to the transition from student learning as, “other-regulated to being self-regulated” (Meyer, 1993). Donaldson (1978) describes an optimal level of student responsibility as learners; “we desire students to be competent, independent, to understand our world and act with skill” (p. 113). Everything we do as educators within the classroom speaks to our students about the beliefs we have about them and our expectations we have for them in terms of responsibility as a learner - what are you saying? If educators do all of the work for the students (i.e. telling them the answer), or we create a culture where the teacher is preeminent in leading learning (i.e. turn taking during discussion) we are sending signals that the teacher is responsible for learning versus students being responsible for learning. Characteristics such as: providing intrinsic motivators for learning and holding students accountable for accuracy in a non-evaluative and collaborative way are just two forms teacher support in transferring responsibility for learning to students. (Meyer, 1993).

There are several strategies for supporting the transfer of responsibility for learning to students. It is important to note that behaviors a teacher models consistently will determine classroom norms. It is not realistic to assume that incorporating these strategies will alter student orientation to-

ward their responsibility in the active learning process over the course of one or two class periods. It will require time and may require teachers to hold an open and honest conversation with students about the intent behind this new style. The following section captures several strategies followed by examples of language that would reflect implementation.

Mediate frustration with new concepts by sharing long-term benefits or evoking curiosity

■ “I know this can be difficult to understand; if you stick with it you’ll be getting more than just a grade for this class. This is a skill you’ll actually use for the rest of your life.”

■ “Providing rich and meaningful examples applying the information to student-centered, real-world events. Speak to things like their hobbies, Supervised Agricultural Experience Programs, Career Development Events, or interests in the FFA organization.”

■ “Praise students for progress in learning not the getting the “right” answer.”

■ “That’s the way we’ve got to begin thinking through situations like this one.”

■ “Steve, share with us how it feels now that you’ve got the process down?”

■ “That’s great, did you see what Clay just did as he talked us through those characteristics - he took it to the next level and provided examples from his own experiences.”

Respond positively to mistakes or errors made during learning and collaborate to redirect

■ “Let’s see if your solution to the practice problem is accurate. When it doesn’t work...Okay, where did the method used to calculate the time value of money go the wrong way? Let’s look at it together. *When it does work*. What do we need to remember from that for the next time we encounter one of these problems?”

■ “How can we use the rules you just summarized to find a workable, accurate solution to the problem?”

The active learning process requires a high degree of cognitive involvement as students actively construct meaning and create links with their current understanding. Active learning is far too complex to be reduced to a set of engaging strategies or techniques; facilitation of the active learning process requires an artful and comprehensive approach. As practitioners we must balance our arsenal of engaging strategies with a meaningful classroom dialogue and teacher support in transferring responsibility for learning to students. Parker Palmer, is accurate in his assertion; “good teachers are truly present in the classroom and deeply engaged with their students and the subject.” Add to that, great teachers adopt an approach to active learning in the classroom that invites students to be co-participants in the process - truly present and deeply engaged with the subject.

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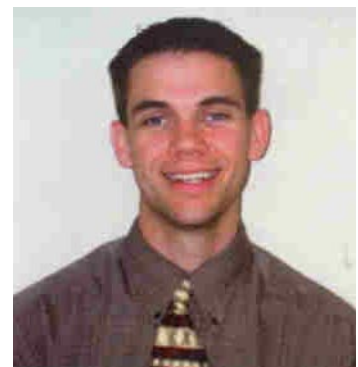
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“Why are Those Kids in Groups?”

By Jonathan D. Ulmer and
Mary McCart Cramer

“As educators today we have the unprecedented job of preparing pupils to participate in a world we can only dimly imagine” (Kagan, 1994, p. 2:1). Their world faces changes in social practices, demographics, and a transformed economy. As teachers we have to find teaching strategies that aid our students in adapting to these changes. The artful use of cooperative learning is a powerful tool. Cooperative learning is organizing students so they work “together to accomplish shared goals” (Johnson & Johnson, 1989, p. 1).

Cooperative learning has been researched more than most teaching strategies. This research has shown overwhelmingly that the use of cooperative learning strategies increases student achievement and productivity (Johnson & Johnson, 1994) and has a positive impact on the social skills of students (Kagan 1994). Social skills of students engaged in cooperative learning consistently grow in two major areas. First, students involved in cooperative learning activities show an increase in working with others to solve problems, in a willingness to help others, and greater self-direction (Kagan, 1994).

Second, “through knowing, working with, and personal interactions with members of diverse groups ... students really learn to value diversity, utilize it for creative problem solving, and develop an ability to work effectively with diverse peers” (Johnson & Johnson, 1989, p. 2). The science of teaching

tells us that cooperative learning increases student achievement. The art of cooperative learning is changing the focus of the classroom from the teacher to the student.

Cooperative learning is a student-centered teaching method, which does not equal less work for the teacher. Teachers must use the same planning skills to prepare for cooperative learning as for any other lesson. Planning focuses less on organizing instructional content and more on forming groups and designing or choosing a cooperative learning strategy that complements the content.

Cooperative learning works best in groups of two to five students. Because one of the goals of cooperative learning is the exposure to diversity, students of different genders, ethnicities, and abilities should be placed together in groups. Having diversity within the groups will promote student learning and development. To enhance group dynamics and production, group members should be made to feel accountable.

Students must feel accountable not only to the group but also be responsible for their own learning. Positive interdependence can be developed through individual and group accountability. For cooperative learning to be effective, it is important that students work together to learn material but be tested individually. This is the art of creating positive interdependence. To complete the process the teacher may record the groups’ average test score as an individual student’s grade. The accountability is created in two ways: first all team members must do well for themselves, and second, they must do well for the group. It becomes the

common goal of the group for everyone to do well on the assessment in order to obtain a higher overall grade.

Johnson and Johnson (1994) identify six ways of creating individual accountability.

1. Keeping the size of the group small. The smaller the size of the group, the greater the individual accountability may be.
2. Giving an individual test to each student.
3. Randomly examining students orally by calling on one student to present group’s work to the teacher (in the presence of the group) or to the entire class.
4. Observing each group and recording the frequency with which each member contributes to the group’s work.
5. Assigning one student in each group the role of checker. The checker asks other group members to explain the reasoning and rationale underlying group answers.
6. Having students teach what they learned to someone else. When all students do this, it is called *simultaneous explaining* (Individual Accountability Section).

Once the groups have been formed, the instructor must assist and support the process. Two ways the teacher can facilitate the interactions are teaching social skills and assigning roles. Students who are new at cooperative work may not have the social skills to be productive. Students must trust one another, communicate accurately, accept and support one another,

and resolve conflicts constructively (Johnson, 1986; Johnson & Johnson, 1987). To assist with the social aspect of the group, members can be assigned roles. Potential roles are “reader, recorder, checker of understanding, encourager of participation, and elaborator of knowledge” (Johnson & Johnson, 1994, Positive Role Interdependence section) and devil’s advocate. Once the groups are set, the teacher must decide which activity best matches the content and students.

Kagan has developed an approach to cooperative learning based on the type of learning taking place: information sharing, mastery of concepts, or increasing thinking. You will find one example of each type of strategy.

One Stray, Three Stay is a cooperative learning strategy that works well when students have a product or information to share. It also gives students experience in gathering information and reporting back to their teammates.

One Stray, Three Stay

1. Students number off.

2. One member of a team (reporter) rotates to the next table to hear their information, while the other three students remain at their original table to explain the information from their team to the reporter who comes to them.

3. Reporters return to their home teams to explain the information to them.

Variations: This can also be done in rounds. Students take turns going to different teams and reporting the information back to their teams.

Three Stray, One Stay: One student remains behind to explain a product of to visiting members. Each student takes a turn remaining while three others go to different teams. When the entire structure is completed, “each student has seen three team products and has explained his/her own once” (Kagan, 1992, p. 12:6). Students discuss what they have learned and apply it to make their own learning deeper.

Numbered Heads Together is a strategy that increases mastery of content. It is an alternative to a question-answer session for the whole class. The teacher can choose content that needs reinforcing or that is critical to students’ understanding. The strategy as outlined by Kagan has four steps.

Numbered Heads Together

1. Students number off.

- a. Each student on the team has a different number.

2. Teacher asks a question.

- a. Teacher asks a question phrased as a directive. For example, “Make sure that everyone on the team can explain the reason for this result.” Rather than “What is an explanation for this result?”

- b. Teacher may provide a time frame.

3. Heads together.

- a. Students make sure that everyone on the team agrees on and knows the answer.

4. Teacher calls a number.

- a. Number is called at random. Teacher may also use a spinner or

drawing of some kind.

- b. If the answer has more than one part, different students may be called on to respond.

Variations: May use individual white boards for each team. May use a signal to see if all groups reached the same response. Teacher may allow for think time after asking the question and before students put their heads together.

Special notes: Works best when students are familiar with the content used.

Teammates Consult is a cooperative learning structure developed by Kagan to increase student participation and thinking when completing traditional worksheets.

Teammates Consult

1. Pens down. All members of the team put writing instruments in holder.

2. Team discussion. One student Reads the first question, and students decide on correct answer through either discussion or reference to textbook.

3. Check for agreement. The student to the left of the reader checks with all team members for understanding and agreement.

4. Individuals write. Each student writes answer in own words.

5. Change roles. For the next question, the checker becomes the reader, and the person on his/her left becomes the checker.

Notes: Forcing students to follow

this structure ensures that the discussion takes place and changes this from a traditional worksheet activity to one that requires more thinking.

There is much debate between teaching competitively or cooperatively. Adults in the work-world must be accustomed to both. "The most frequent reason for individuals to be fired from their first job is not lack of job-related skills but rather lack of interpersonal skills" (Kagan, 1994, Ten Frequent Questions). Although the authors of this article are firm believers in cooperative learning, we do not advocate using it exclusively. Kagan said, "It would be just as unhealthy for schools to teach exclusively with cooperative methods as with competitive individualistic methods" (1994, Ten Frequent Questions).

Additional Resources:

www.kaganonline.com

www.co-operation.org

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Students learn and apply concepts in team building and leadership while working their way through a giant spider web.

Creative Keys to Unlock Your Classes

By Rob Terry and
Amy Mounce

The great agricultural scientist George Washington Carver once said, “When you do the common things in life in an uncommon way, you will command the attention of the world” (Thinkexist.com, George Washington Carver quotes, n.d.). What an appropriate statement from a true genius. If you think about it, that statement sums up why we remember “The Plant Doctor” today. Carver, a man from the most humble of beginnings, with all of the odds against him, discovered uncommon uses for some of the most common of plants – peanuts, soy beans and sweet potatoes – and is now revered by people the world over.

Carver’s words of wisdom hold the secret for our effectiveness as teachers. While Carver gained the “attention of the world,” by doing “uncommon” things in his laboratory, we can use that same formula for success in our classrooms. Teachers aren’t looking to gain the attention of the world; they just want the attention of their classes!

What does it mean to do things in an uncommon way? To us, it comes down to one, simple word that describes a very complex process – creativity. Carver also said that “...new developments are the products of a creative mind” (Thinkexist.com, George Washington Carver quotes, n.d.). To capture and maintain the attention of their students, teachers must use their creative minds to develop new ways to do common things.

As is the case with most talents and abilities, creativity varies from one person to the next. Some people find it very natural to express their qualities of originality, artistry, ingenuity and innovativeness while others are not as imaginative or resourceful. Teachers have no choice! To be successful with today’s students, in a time that many experts say children’s attention spans are becoming shorter, teachers must discover ways to engage their students.

In his book, *A Whack on the Side of the Head* (1990), Roger von Oech outlined mental locks to creativity. Let’s take a look at eight of these locks that pertain to teachers and discuss keys to open them.

1. “The Right Answer” (von Oech, 1990, p. 21)

From the time we enter schools as kindergarteners, we begin the process of looking for **the** right answer. As we all know from our teacher education classes, the vast majority of test questions ask students to simply regurgitate memorized facts rather than process information. For teachers, focusing on “the right answer” causes us to teach as we were taught. The same tired, old ways are tired and old! Give ‘em a rest! Rather, seek out alternative approaches to introducing lessons and illustrating key points. Consider different kinds of assignments and learning activities to assess student achievement.

How have you been introducing your lesson on the part of a plant? How else could you teach it? How else? How else? One of those alternative ways might be better than what you’ve been doing in the past. If you don’t

look for another answer, you’ll never find a better way.

2. “That’s Not Logical” (von Oech, 1990, p. 33)

Albert Einstein said, “Imagination is more important than logic” (Thinkexist.com, Albert Einstein quotes, n.d.). If Einstein valued imagination so highly, surely it has some value for agriculture teachers as well. Many of the subjects we teach are based in science and other principles of logic. They are exact, precise, ordered and consistent. As illogical as it might sound, sometimes the best way to communicate those principles is by using what von Oech called “soft thinking.” Creative teachers use metaphors, humor, music and other unique, seemingly unrelated approaches to develop powerful links to what they teach.

Are your students bored when you go through your summary of parliamentary procedure motions handout? How about setting the types of motions to a rap? What about creating physical movements related to each motion? If it seems illogical, it just might work!

3. “Follow the Rules” (von Oech, 1990, p. 53)

We’re not promoting anarchy, but there are some sacred cows in agricultural education that need to be sent to the slaughterhouse! In fact, challenging the rules has brought about some wonderful changes in our field. There was a time when women were not allowed to take agriculture classes or be members of the FFA. People questioned that rule and our classes and leadership development organization have improved because the rule was

eventually changed. Likewise, teachers should challenge established procedures they use when they teach. "Because that's the way we've always done it" is a lousy reason to keep on doing something that's ineffective. The rationale for some rules becomes outdated. Still other rules were based on faulty reasoning in the first place. Sometimes you have to do what Tom Marshall, an ag teacher in Portal, Georgia says, "Subvert the dominate paradigm!"

Who says you have to teach breeds of livestock to first year students? To what new topics could you expose your students if you questioned the current, set list of competencies for a particular class and tried something new?

4. "Play is Frivolous" (von Oech, 1990, p. 87)

There's an old teachers adage that says, "Don't let 'em see you smile 'til Thanksgiving." The idea was that teachers need to establish themselves as serious educators and make sure their students know they mean business before they loosen the reins. Hogwash! Learning, especially in an elective class, ought to be fun.

There are numerous ways to weave exciting, interactive activities into your lessons. Dr. Jack Pritchard, Professor Emeritus of Agricultural Education at Oklahoma State, used to provide a booklet of motivational games to student teachers. There have now been two generations of ag teachers in Oklahoma who have used this resource to make learning more enjoyable – and more effective – for their students.

Are you tired of presenting text book and PowerPoint lessons? Guar-

anteed, your students are! How would the dynamics of your classroom change if you added a game board, bean bag or basketball to the mix?

5. "That's not My Area" (von Oech, 1990, p. 101)

Schools are often structured in such a way that teachers tend to focus on their specialized area, often unaware and unconcerned about other subject areas. While that approach is

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certainly understandable, it can be detrimental to teachers and students alike. It can cause a program, like agricultural education, to become isolated from the educational community of the school and seem irrelevant to those not

intimately involved in it. Such an approach can also lead to a myopic view how to teach. Ag teachers could learn a lot about teaching ag mechanics by watching how the physics teacher runs lab activities. Likewise, math teachers could benefit from seeing the effectiveness of the SAE record book in teaching the application of mathematical concepts.

Do you think it's only the English teacher's job to take off for spelling on papers? Have you decided you don't have enough expertise in social studies to help kids understand the importance of agriculture to westward expansion of the US? Well, think again! Effective teachers find creative ways to integrate multidisciplinary approaches into their curriculum.

6. "Don't be Foolish" (von Oech, 1990, p. 133)

Weird Al Jankovic, who has made a fortune for himself by parodying some of the biggest hits in pop music, has an album titled, "Dare to be Stupid." That's actually pretty good advice for teachers. Don't be afraid to be a little goofy in your classes. Teaching is a performance art. Among the top eleven characteristics of effective teachers identified by Rosenshine and Furst (1971) is the trait of enthusiasm. Your students will remember the lessons where you let your guard down and put on a show for them.

Are your students' eyes glazed over as you teach them about the poultry industry? What if you showed up in class tomorrow in a chicken suit?

7. "To Err is Wrong" (von Oech, 1990, p. 151)

No one enjoys failure. In fact many people have such an aversion to

it that they are paralyzed from trying anything new. They avoid failure by never taking risks. Thomas Edison, one of the greatest and most influential inventors ever, knew failure well. It is said he tried over 6,000 different fibers looking for a filament suitable to mass-produce his light bulb. In other words, he erred *thousands* of times before he found success. About these failures Edison said, "I am not discouraged, because every wrong attempt discarded is another step forward" (Thinkexist.com, Thomas Alva Edison quotes, n.d.) Teachers should adopt Edison's approach in their teaching. Take risks! Try new things! If they fall flat, appreciate the progress gained by finding out what doesn't work. A teacher will not be labeled a failure for a few unsuccessful attempts to shake things up. Again, to quote Edison, "Many of life's failures are men who did not realize how close they were to success when they gave up" (Thinkexist.com, Thomas Alva Edison quotes, n.d.)

So, your students didn't "get it" when you had them role play deer and hunters in your wildlife habitat lesson. Maybe you didn't go far enough. Maybe next time you should have more props and used the wooded area behind your school to make it more real. Students appreciate a teacher who makes an effort to engage them in unique ways – even when those efforts fail to have the intended effect.

8. "I'm Not Creative" (von Oech, 1990, p. 161)

After looking over the suggestions above, are those locks to creativity still closed tight? Until you are willing to open this last, most stubborn lock, you'll never be able to make your classes the exciting, energetic, engaging effective environments of education they should

be. If you keep telling yourself, "I'm not creative," you're right. You'll never be creative because you won't give yourself a chance to try. It is a self-fulfilling prophecy. Again, the wisdom of George Washington Carver applies here. He said, "Ninety-nine percent of the failures come from people who have the habit of making excuses." Don't make excuses – create excellence!

Discovering and employing creative approaches in teaching is hard work. You're not going to create interest and energy in your classes by passing out cans of Mountain Dew or serving up cups of java. It takes a lot more mental and emotional effort than that. Fortunately, there are resources at your disposal everywhere if you'll take the time to look for them. You can find ideas to spice up your classroom on television, the Internet, music, books, other teachers, your personal experiences, your students' experiences, and more. The keys to creativity in teaching are all around you – you just have to be willing to open the locks. In doing so, you'll discover the uncommon ways to command the attention of your students like never before!

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Two Ag Teachers Discuss How to Get Their Students to Learn

By George W. Wardlow

(Over coffee at the local diner on a Saturday morning while their students participate in a CDE.)

Roy: Hey Earl, I've been teaching my heart out and I cannot get most of my students to want to learn this stuff. Don't they realize how important agriculture is?

Earl: Roy, kids just haven't lived long enough to appreciate what they don't know.

Roy: Rather than me just telling them tons of facts and figures and showing them basic skills, I would sure like to figure out some way to help them take some ownership in what they are

learning. You know, so they might remember it for more than just long enough to pass the test.

Earl: Sure would be nice if I thought that some of them would actually remember this stuff long enough to use it someday. You know, they have to grow up and pay taxes and take over for us sooner or later.

Roy: Well every time I introduce a new subject they sure have plenty of opinions about it. I can barely get them to listen long enough in class so I can lecture the material to them. All they want to do is talk about what they think they know?

Earl: When you introduce a new subject and they think they already know about it, are they ever right?

Roy: Sometimes, but usually not.

They have usually heard about the topic but don't much of any real deep understanding of the details.

Earl: Do you tell them that? I mean, do you tell them what they *think* they know is really wrong? Hey, why not help them to understand which parts of what they know is wrong and why, and then help them use what they know is right to understand what it is you are trying to teach?

Roy: Ok, I could set up what I want to teach as a problem to solve, maybe a real-life problem from one of their SAE projects, and I could act like I don't really know the answer myself. Then, I could help them pose a series of questions which, if we answered, would lead us to the principle I was trying to teach.

Earl: I think that might work! But, you couldn't lecture to them. And, you couldn't let the discussion just be around the edges of the subject, it would have to lead toward "discovering" the principle you were aiming at. And, they'd have to be able to ask questions of each other, too.

Roy: I couldn't let 2 or 3 of the smart ones dominate the discussion either. Everyone would have to freely participate and not be afraid to chip in with their opinions.

Earl: Keep thinking!

Roy: I suppose I'd have to know how to build a series of questions that start out easy, to let every student in on the ground floor of the discussion, then build up to the harder ones, leading the students to think through the logic and come up with the right answers every step of the way.



Earl: You mean that you'd have to dust off your college notes on Blooms's Taxonomy of Learning and build a series of questions beginning at the knowledge and understanding levels and advancing through the analyzing, synthesizing and evaluating levels. Are you sure you're up to this, Roy?

Roy: I would have to think through my lessons in advance to make sure that I had a clear understanding that my questioning technique was all about helping the students "discover" the principle I was trying to teach, rather than me just "giving" it to them. But yeah, with some practice I think this could be a lot more fun for me and them.

Earl: Not to mention that if they "discover" the principle you were trying to teach from their own background knowledge and opinions, they will be much more likely to remember it and be able to put it to use.

Roy: Ok, let me see if I got this

Early agricultural educators laid claim to this method of teaching long ago, but we may have forgotten our roots of late.

right. I have to set up what I am trying to teach as a principle-to-discover or a problem-to-solve. Then, I have to ask a series of questions that build on each other to lead students from what they *think* they know to discovering the principle. It would sure help if I had a good idea of what they already knew about the subject before we began.

Earl: Do you think that getting to know the students "on their turf," like on an SAE visit, would help you out there?

Roy: Don't interrupt me, I am on a roll. They would have to think that I didn't necessarily know the "correct answer" and was on this little discovery journey *with* them. I couldn't let this deteriorate into a debate or test of wills between students, or let a few dominate it. I'd have to recognize when students were on the right track and encourage them to continue thinking out loud. But, I couldn't let students think that I knew the answer, I would just be discussion leader.

Earl: You'd have to run the discussion as a democracy, with everyone encouraged to participate, ask questions, and give answers.

Roy: We can do this! I just have to keep telling myself, "If my students can *discover* the principle that I am trying to teach them for themselves, through a discussion, based on an examination of what they know and what they don't know, they will probably remember it much longer than if I just tell it to them."

(Roy has "discovered" the Socratic Method of teaching and learning, based on the methods used by Socrates in his teaching in ancient Greece. Early agricultural educators laid claim to this method of teaching

long ago, but we may have forgotten our roots of late. In this example dialogue, little did Roy know that Earl employed the very technique on him to help him discover the method so that he could use it on his students.)

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The Art of Integrating Technology into Agriscience Programs

By *Tim Murphy*

Twenty years ago agricultural educators effectively communicated concepts of agriculture using only traditional technologies: welders, cutting torches, table saws, etc. Why does it seem that all the sudden we're being told we need to integrate these new technologies into our curriculum in order to be effective teachers? The answer is that twenty years ago agriculture teachers were modeling critical thinking and practicing hands on learning through the technologies appropriate to prepare students for their future after high school. That responsibility has not changed. Employers and colleges alike expect the students we produce to possess the technology skills that they need to survive in their respective career choices. What have changed are the technologies our students will need to use effectively in their future.

Over the past few years, your definition of the Internet has probably broadened. You may have become comfortable thinking of the Internet as something that was confined within that box we call a computer. You were used to thinking of the Internet (primarily Email and World Wide Web) as something you left behind when you turned off the computer. Now, due to digital convergence, the Internet has left the box. It followed us into our homes, and rides with us nearly everywhere we go providing us with voice, video, images, text, and data. It now includes: text messages, and even digital pictures, sent to and from our cell phones; maps linked to our current location with information supplied from our GPS; digital video

recorders that control what we watch on our televisions, streaming audio and video clips can be purchased and played online, or on personal media players like the iPod. The Internet is out of the box, and like it or not, it's not going back in.

Digital convergence, the marriage of computers and communications networks like telephones, radio, and television, is changing the way we access information, communicate, work, and entertain ourselves. It has changed the way our students access information, communicate, and learn. It has reduced distances, bridged cultures, and brought the four corners of the globe closer together. It should affect the way we teach.

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The authors see evidence that it is. In several schools we've visited wireless technologies are revolutionizing classroom teaching. In a few greenhouses, students are using elec-

tronic sensors to collect temperature and humidity data for use in real time experiments. GPS devices have found a home in many Agriscience programs, paving the way for careers in Prescription Farming. Computer Based Learning (CBL) or Computer Aided Instruction (CAI) programs are becoming more popular in school libraries and computer labs. Electronic textbooks have begun to appear, and online applications in support of specific subjects are being assigned in more courses. Website addresses are being provided by many teachers as either integral or supporting materials for their lessons. Email is the preferred mode of communication at many schools. The authors believe that most educators have embraced technology and are working to incorporate it into their agriscience programs.

So why do we keep reading that teachers are poorly trained and inadequately prepared to integrate technology into the classroom? The Office of Technology Assessment's 1995 report on teachers and technology stated that schools have made significant progress in implementing technology and helping teachers to use basic technology tools, but found that teachers still struggle with integrating technology into the curriculum. The task force of the National Council for the Accreditation of Teacher Education (NCATE) concluded that colleges are not properly preparing teachers to use technology in their teaching. This report stated, "Bluntly, a majority of teacher education programs are falling far short of what needs to be done" (NCATE, 1997, p. 6).

Few people disagree that it is vital that we integrate technology into our

agriscience programs. These new “converged” technologies will be the tools our students need to succeed as both consumers and workers in the future. They are the keys our students will need to unlock the global market and start their career in the global workplace. The authors have seen many teachers doing a wonderful job of integrating technology into their programs, and according to the New Teachers New Technology Report conducted by the University of Minnesota Division of Education, some 60% of the teachers participating in their program feel ‘very well prepared’ or ‘well prepared’ to integrate technology into their classroom.”

So we want to provide some suggestions to the 40% who feel unprepared. In this article you’ll find practical suggestions useful for those just starting to integrate technology and for those who would like to do more in this area.

In studies of technology integration done here at Texas A&M University, we divided technology use by the teacher into three levels: personal, administrative, and instructional. In the personal level, teachers used technology to accomplish tasks outside the school. In the administrative level, teachers used technology to perform work-related tasks like contacting students and parents (including merge mail), managing recordkeeping (including grades), and budgets (including FFA accounts). Instructional use of technology was any use of technology in support of teaching or learning.

Then we divided instructional technology integration into three levels: teacher use of technology, student use of technology, and independent student creation through technology. In the first level, teachers use technology like

So why do we keep reading that teachers are poorly trained and inadequately prepared to integrate technology into the classroom?

PowerPoint presentations or the use a website in front of the class. The second level finds students using technology to accomplish tasks, either in or out of class, in ways prescribed by the teacher. In the third level, the technology becomes the means, rather than the end, to learning. Students work to create products that demonstrate their mastery of the learning outcomes through materials created using technology. Examples included multimedia projects, CAD blueprints, research reports with data-driven graphs and charts, and business plans. We expect that these indirect, learner-centered approaches will have the largest and most lasting effect on student achievement.

What we’ve found about teachers’ use of technology was that teachers at the highest levels were usually at the lower as well. What we think this means is that teachers must first use the technology themselves, in their personal lives, then they will begin to use it to accomplish administrative tasks in the Agriscience program, and finally

they will use it for and with their students in teaching and learning.

When looking at technology integration, we found a similar relationship. That is that students independently using technology to create were in programs where they used technology with guidance, and where teachers modeled technology use in their teaching.

So, here are some suggestions we believe will help you become more efficient and effective in your work, while assisting your students in using technology. I expect many of you already do many of these things. I hope you find something that will move you and your students forward.

Use it yourself. Join the digital culture; become “converged.” Buy a new laptop. A laptop is the Swiss Army knife of the digital culture; able to accomplish nearly any task. Make sure it has wireless connectivity built in. The price has dropped. For an adequate laptop, you’ll spend between \$800-\$1200. Get a broadband connection at home. Hook up a wireless access point. Use it. Get the news from CNN, check the scores on Fox Sports, sign up for the free New York Times, shop, buy and sell on eBay, and most importantly, use email to communicate. Email is rapidly becoming the preferred method of communication for your parents; it already is for your students. Email can complete the communications loop among the three important members of the school learning triad: the teacher, the student, and the parent. Email will be delivered and read. Parents will respond. Can you say that about handwritten notes sent home with the student?

Use the web in support of instruction. Many FFA Chapters have

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a website, and some of these are excellent. They describe the FFA events and accomplishments; provide contacts for the advisor and the FFA Officers. Even the best ones don't usually have much about the 'courses' in the Agriscience program. Remember we are an intracurricular program. Add an academic component. List the courses taught in the program and the rotation. Create course pages for every class. Include the syllabus, your assignments, unit outlines, objectives, course materials, handouts, and even lesson plans. Provide a list of website links for the course, nearly every subject can benefit from the resources available on the Internet. If you have a student interested in journalism and communications, add a blog to the website. This latest technology, weblogging or blogging, provides a journal

of class and club activities in an energizing, extemporaneous way that speaks to the digital culture.

Light up your lessons. Incorporate a digital projector into your daily lessons. Use PowerPoint. Many teachers started using this technology over the past few years. Many involved students in collecting media and creating the presentations. Many of them tell me that they continue to find additional, unexpected benefits from adopting this technology. Among these benefits are: better course organization, planning, and evaluation; the ability to easily incorporate new materials, and new media, like audio and video into their lessons; and the ability to repurpose course materials for instructor and student use outside the class. A digital projector in your classroom isn't all you need, but it will light your way into the digital culture.

Get assistance. Learn from your colleagues. In every school district there are always a handful of technology gurus. Often they are students. Capture their talent while providing them with a showcase for their skills. Hire a consultant for the major projects, like website design and development. You may find someone in your community who would donate these services or provide them at a reduced rate. Share resources. If you have a great website, provide it as a template for other programs. Subscribe to a mailing list like EDTECH (<http://www.h-net.msu.edu/~edweb/>). There are 3,500 subscribers just like you asking questions and learning about using technology in the classroom. Integrating technology into your program is a complex business, get some help.

Every component in a technologically integrated learning and teaching system needs to be constantly up-

graded. It's not fun, but that's the way it is. The teacher is the most important component in the system. Agriscience teachers have always had to model critical thinking and problem solving techniques through the technologies the students need to be able to use to be successful in their future after high school. We still do.

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The Art of Teacher Reflection

By Amanda Stemme and
Scott Burris

A perennial debate exists among educators as to the nature of teaching. At the same time, many facets of the teaching process are often a result of personal interpretation or “artistic” influence expressed by an individual. These abilities require “nurturing” and development, contrary to a check-list type skills approach. To examine the effectiveness of our technical skills, we can simply check the boxes on our standardized teacher evaluation forms. To examine the effectiveness of our artistic contributions, well, there’s reflection.

It’s often been said that experience is the best teacher. But is it? According to Dewey, we do not learn as much from experience as we do when we reflect on that experience. That being said, what exactly is reflection and how does it fit in with the daily process of teaching? In fact, reflection has become such a hot topic in education circles that a multitude of “self-help” books for teachers have been published on the topic. Even teacher prep programs at the university level include reflection as part of the principles of program design.

As teachers, we have all found ourselves “reflecting” on some aspect of our teaching. Whether it is on the ride home - - “was that the best way to handle that discipline problem with Jared?” or at the end of a unit of instruction - - “what can I change to make this lesson come alive for my students?” - - we have all reflected on our teaching at some point. However, in order for reflection to lead to increased effectiveness as a teacher,

there has to be some organization to our reflection and it should be done on a regular basis.

What is Reflection?

Reflection, reflective practice, reflective inquiry, and reflective teaching are all terms that are thrown about interchangeably. The underlying assumption is that reflection is a mechanism to become a more effective teacher. It is a mindset or a “way of being” in the classroom. According to Dewey, teachers who strive to be reflective share three common characteristics. First, they are open-minded and are willing to listen to more than one side of an issue and give attention to alternate views. Additionally, reflective teachers are responsible and carefully consider the consequences of their actions. Finally, reflective practitioners are wholehearted, committed to seek every opportunity to learn. Do you possess any of these characteristics? Are you a reflective teacher?

As teachers, we often find ourselves reflecting on events that took place in our classroom. These thoughts, however, do not necessarily lead to increased effectiveness. To be critically reflective, we have to take action. Farrell (2004) summarized reflection by describing three different types of reflection..

Types of Reflection

1. **Reflection in action** refers to reflection that occurs in the midst of practice; making decisions about events in the classroom as they happen.

2. **Reflection on action** refers to the reflection that takes place after an event; giving reasons for actions or behaviors in class.

3. **Reflection for action** is proactive in nature and is intended to guide future action.

Reflection in Action

Most teachers probably recognize **reflection in action** as those “teachable moments” that often arise unplanned in class. Something happens in the classroom and you decide to deviate from your lesson plan in order to address a student concern or question. You must be tuned-in to your classroom, listening for those questions and observing non-verbal communication cues from students that are saying “I’m lost.” It can be difficult to be tuned in and willing to deviate from the plan. However, some of the best days in the classroom can be when reflection in action leads to those teachable moments.

Reflection on Action

Reflection on action is something teachers should do on a daily basis. At the end of each day, take time to walk back through each of your classes mentally. Have your lesson plans for that day close at hand to jot down any thoughts you would like to clarify for the next class period, or to write down changes you would like to make for the next time you teach that lesson. Also, try to recall any specific actions/behaviors of you or your students in class, especially if there were discipline problems. Process the steps taken to resolve the problem, try to see the situation from all sides, and determine if anything needs to be handled differently and what can be done to avoid these situations in the future. Another way to **reflect on action** is through discussion with other agriculture teachers. In agricultural education, we are fortunate to have the ca-

maraderie that we do as agriculture teachers. We can also learn a lot from discussions with other teachers. Often, the most useful parts of professional development meetings are talking with other teachers about new things to try or problems we are facing. It is a chance to share ideas and solutions to situations we all face. Reflecting on action can lead to changes in our teaching practices that can increase our effectiveness.

Reflection for Action

As student teachers and first year teachers, we spend many late nights **reflecting for action**. It is important to have everything ready for each class for the next day before we leave. This list includes creating lesson plans, teaching aids, copies, overhead transparencies, handouts and PowerPoint. As we gain experience, we are able to find more efficient ways to spend our time. At the end of the school year, go through the materials for each class and make changes that were noted throughout the year, update needed materials and replace or change any teaching aids. Reflection in action becomes an investment in your teaching. By doing this, you are ready for the next school year.

The literature is full of suggestions on how teachers can become reflective practitioners. Regardless of the activity, the focus should be on answering key questions such as: What am I doing in the classroom? Why am I doing this? What is the result of these actions? Will I change anything based on this information? Following are some suggested activities to help answer these questions and promote reflective practice in teaching.

Group Discussions – Collaborative discussions can be highly ben-

eficial. Teachers have an opportunity to build on one another's classroom experiences. Why not formalize those discussions and identify a proactive approach?

Classroom Observations – Some teachers are fearful of the critical nature of evaluations. The feedback from an observer can be a powerful tool for improvement. Likewise, observing another teacher can be a great resource. Pair up with a fellow teacher and exchange feedback.

Teaching Portfolios – Portfolios contain an unlimited variety of evidence of your teaching expertise. In order to put one together, you must examine your professional strengths and weakness. This will help you identify areas for growth.

Teaching Journal – Journals can be a simple yet effective tool for reflection. They provide a place to record your criticisms, doubts, and frustrations, as well as the joys, successes, and accomplishments you experience in your classroom. Processing these events and putting them down on paper foster critical reflection.

Reflection is something we all know how to do; we just need to learn how to make it work for us. It is similar to time management and planning systems. It doesn't matter what type of system is used. The best time managers are those that find a system that works for them and use it on a daily basis. The same can be said for reflection. Whether you prefer to use a journal or jot down short notes on your lesson plan, it is important to find a system of reflection that works for you and use it regularly. One thing is certain, the time and effort you invest in critical reflection will yield rewards in your classroom.

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The Art of Lecture

By Dan Swafford and
Dean Swafford

As we approach the end of our teaching careers we reflect back upon them. What has allowed two graduates from a small college in Missouri to remain in teaching for over thirty years? Was it our formal education, NO-neither one of us began our careers as certified teachers. We both had undergraduate degrees in Agricultural Business and became certified through alternate routes. By not having a formal undergraduate agriculture education experience, we were forced to develop strategies that allowed us to survive in the classroom. One strategy we developed was the “Art of the Lecture.”

Since the time of the ancient Greeks, the lecture has been a major component of any educational program. “Socrates devoted himself to free-wheeling discussion with the aristocratic young citizens of Athens”. Today, in many educational circles, the use of the lecture is frowned upon by professors and teachers alike. But it is the “art” of being able to discuss information with students that sets a teacher off from a just being a “conveyor of information”. We do realize that the lecture cannot be the only means to teach secondary students of agriculture. But, it still should be a component in the educational process.

As we think back to our high school and college instructors, we remember those who were the “great lecturers” and have a tendency to forget those who were not. We are amazed by the teachers who are afraid

**One strategy
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to stand up and teach. A high school general education teacher once asked an agriculture teacher “what are you going to do in class today?” The Agriculture teacher replied “I am going to talk to my students about a certain subject”. The other teacher replied “You mean you are going to stand up and talk in front of your students, I could never do that”. What are the factors that make up the “Art of the Lecture” and allow it to be successful in an age of multimedia productions and computer assisted instruction?

First, a successful lecturer must be excited to teach. How do we show this excitement? Teach with both emotion and with passion. Students become excited about learning when their teacher is excited. We have both taught classes of students that were not excited about learning and by using some passion and emotion in our voices, make those students excited about learning.

Secondly, use some humor in your teaching, all students like to laugh a little. Many teachers respond to this by saying “I don’t have much of a sense of humor.” Well you might try to develop one. The use of humor can often defuse or even prevent a discipline problem in the classroom.

Next be prepared to teach. Sometimes a teacher will use the excuse that they do not feel comfortable teaching in front of the classroom. Teachers must know and understand what they are going to on class day. It is often said that to teach “you must be a little bit of a comedian. No good comedian would ever think about doing their routine without practicing it first. New teachers should be very concerned about practicing their lesson before they present it in class. By practicing before hand they will be much more comfortable during class.

Finally, don’t allow discipline problems during your presentation. We both have the saying, “If I’m talking your not.” We emphasis to the students that they must show respect to the instructor by listening and raising their hand to speak during class. Nothing is more depressing than to watch a teacher try to teach in front of a class that is not paying attention to the instructor.

In closing, these are but a few of the ways that you can make the “art of the lecture” a part of your teaching. As we stated earlier, the lecture should not be the only part of your teaching, but it should still be included in the lesson. As you use the lecture you will find that it can help create excitement in your students for the lesson and encourage them to develop a positive rapport with the instructor.

Dan Swafford and Dean Swafford-twin agriculture instruction received their degrees from Central Missouri State and the University of Missouri. They have more than 60 years of combined teaching experience.

