

TEACHING

At last, you are in command of a classroom. Good teaching is not a “power trip,” however. Be sure to pay constant attention to observing, evaluating and improving your teaching. Teaching is both an art and a science. The following information aims to help you better prepare to deliver high quality instruction which engages your students in working toward meeting established learning outcomes.

STEPS TO SUCCESS

1. Review effective teaching methods and techniques you have seen demonstrated and/or learned. Use the best in your classroom, including effective questioning skills.
2. Think about your teaching effectiveness every day.
3. Take time out for reflective self-evaluation at least once a week. Use the insights you gain to improve next week’s teaching.
4. Observe teachers—yourself (on video or audio tape) and others. Analyze the experience on the teaching observation and evaluation form.
5. Enhance students’ reading and mathematics skills. Have students read on a daily basis and use mathematics skills to solve problems.

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ESSENTIAL TERMS AND ABBREVIATIONS

21st Century Skills - skills which students need to be successful and productive citizens beyond high school. Examples include critical thinking, creativity, collaboration, and communication. See also Employability Skills.

Academic integration - infusing concepts and skills from core academic subjects including math, science, English, and social studies, into your instruction.

Advanced Placement (AP) - designation for a course which is instruction on the college level for students of advanced academic ability. Typically results in students taking the AP Exam for their corresponding coursework at the end of the school year. Students meeting a minimum set score can earn college credit at various postsecondary institutions.

Assessment

- Criterion-referenced - assessment that formulates a grade based on the result of the student's performance compared to a standard.
- Norm-referenced - assessment which measures a student's performance against the overall performance of a group of similar students. Examples are curved grades.
- Summative - final assessment of student knowledge. Typically exams and large projects.

- Formative - assessment which checks for student understanding of the content as that content is being taught. Results of these checks for understanding informs the instructor's knowledge of student progress toward the learning objectives. Examples include questioning, homework, and entrance and exit slips.
- Authentic - assessment which requires students to apply the skills and knowledge they have developed in a real-world and/or applied context. This is in contrast to assessments which require primarily memorizing information instead of utilizing information.
- Standardized - assessment which typically consists of multiple-choice questions to allow for consistent and standardized scoring.

Asset approach (vs. deficit approach) - assumption that your students all have knowledge and experiences to share, rather than assuming something is wrong with them that needs to be fixed.

Background knowledge - knowledge, experiences, and assumptions which students have prior to your instruction of a topic. Also referred to as "prior knowledge."

ESSENTIAL TERMS AND ABBREVIATIONS

Best practices - research-based ways of teaching and learning which have been shown to be effective.

Bloom's Taxonomy - framework developed by Benjamin Bloom (1956) and later revised (2001) to classify the types of cognitive processes which people engage with thinking and learning. Resource commonly used to develop learning objectives.

Critical thinking - ability to analyze a situation or text and form an opinion or solution.

Curriculum integration - organizing curriculum around core themes instead of core subjects.

Data-based decisions - making informed decisions about teaching and learning based on assessment results.

Differentiated instruction - tailoring instruction to meet individual needs. Whether teachers differentiate content, process, products, or the learning environment, the use of ongoing assessment and flexible grouping makes this a successful approach to instruction.

Domains of learning - There are many categories of learning, each of which fall under three major domains: cognitive, affective, and psychomotor. Each type of learning outcome requires a different type of instruction.

- Cognitive - Intellectual skills, cognitive strategy and verbal information. Learning outcome examples: understanding, problem solving, categorizing, time management, memorization, etc.
- Affective - Affective skills and disposition for appropriate emotions and responses. Learning outcome example: A vet science student may need to know and demonstrate appropriate emotional responses to a future client's statements and actions.

- Psychomotor - Physical actions, reflexes, interpretive movements and hand-eye coordination. Learning outcome example: A student studying welding will need to know how to lay a bead as well as be able to perform laying a bead.

Employability Skills - essential skills, personal qualities, and values that enable someone to thrive in any workplace. Examples include; good communication, motivation, work ethic, and team work.

Flipped instruction - instructional strategy and a type of blended learning, which aims to increase student engagement and learning by having students complete readings at their home and work on live problem-solving during class time.

Graphic organizer - visual and graphic display that depicts the relationships between facts, terms, and or ideas within a learning task.

Growth mindset - the belief that you can learn more or become smarter if you work hard and persevere. Students who embrace growth mindsets may learn more, learn it more quickly, and view challenges and failures as opportunities to improve their learning and skills.

Higher-order thinking skills - series of important competencies individuals can utilize in order to improve learning progress and critical thinking.

Inclusion - the practice or policy of providing equal access to opportunities and resources for people who might otherwise be excluded or marginalized, such as those who have physical or mental disabilities and members of other minority groups.

ESSENTIAL TERMS AND ABBREVIATIONS

Inquiry-based learning - an approach to learning that emphasizes the student's role in the learning process. Rather than the teacher telling students what they need to know, students are encouraged to explore the material, ask questions, and share ideas.

Learning styles - the ways that different students learn.

Mastery learning - the idea that teaching should organize learning through ordered steps. In order to move to the next step, students have to master the prerequisite step.

Metacognition - awareness and understanding of one's own thought processes.

Motivation - the general desire or willingness of someone to do something.

Intrinsic - the act of doing something without any obvious external rewards.

Extrinsic - the tendency to engage in activities in order to gain some type of known, external reward.

Multicultural education - any form of education or teaching that incorporates the histories, texts, values, beliefs, and perspectives of people from different cultural backgrounds. At the classroom level, for example, teachers may modify or incorporate lessons to reflect the cultural diversity of the students in a particular class.

Multiple intelligences - a theory describing the different ways students learn and acquire information.

- Bodily-kinesthetic - learners are hands-on learners and grasp information more easily by doing, exploring, and discovering.
- Interpersonal - the ability to understand and interact effectively with others.

- Intrapersonal - the capacity to understand oneself and one's thoughts and feelings, and to use such knowledge in planning and directioning one's life.
- Linguistic-verbal - the ability to think in words and to use language to express and appreciate complex meanings.
- Logical-mathematical - the ability to calculate, quantify, consider propositions and hypotheses, and carry out complete mathematical operations.
- Musical - the capacity to discern pitch, rhythm, timbre, and tone. This intelligence enables us to recognize, create, reproduce, and reflect on music, as demonstrated by composers, conductors, musicians, vocalist, and sensitive listeners.
- Naturalistic - the human ability to discriminate among living things (plants, animals) as well as sensitivity to other features of the natural world (clouds, rock configurations).
- Visual-spatial - the ability to think in three dimensions. Core capacities include mental imagery, spatial reasoning, image manipulation, graphic and artistic skills, and an active imagination.

Positive classroom management - the wide variety of skills and techniques that teachers use to keep students organized, orderly, focused, attentive, on task, and academically productive during a class.

Problem-based learning - a student-centered approach in which students learn about a subject by working in groups to solve an open-ended problem.

ESSENTIAL TERMS AND ABBREVIATIONS

Project-based learning - a teaching method in which students learn by actively engaging in real-world and personally meaningful projects.

Relevance - Relevance is the ability of a person to acknowledge and align oneself with a purpose that is meaningful, one that will enhance their survival or success.

Rigor - Rigor is creating an environment in which each student is expected to learn at high levels, each student is supported so he or she can learn at high levels, and each student demonstrates learning at high levels.

Rubric - a scoring guide used to evaluate the quality of students' constructed responses.

Scaffolding - a variety of instructional techniques used to move students progressively toward stronger understanding and, ultimately, greater independence in the learning process.

Scientific method - a method of procedure that has characterized natural science since the 17th century, consisting in systematic observation, measurement, and experiment, and the formulation, testing, and modification of hypotheses.

- Hypothesis - an educated prediction that can be tested.
- Observation - the active acquisition of information from a primary source. In science, observation can also involve the perception and recording of data via the use of scientific instruments.
- Data - the information gained from observing and testing an experiment.
- Conclusion - new ideas based on evidence.

SLO - Student Learning Objective - the implementation of a long-term academic goal or set of goals created by a teacher or group of teachers

using data about students and their learning over a defined period of time. SLOs are being used as a component of teacher evaluation in many states.

Teachable moment - an opportunity for a teacher or parent to provide special insights on a topic that has captured the attention of their classroom or children. Teachable moments are unplanned and must be sensed and seized by the teacher or parent.

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WAYS TO MOTIVATE STUDENTS

One of the biggest challenges you may face as an agriculture teacher is identifying how to motivate and engage students in your agriculture program. Adolescent learners experience a variety of demands upon their attention while still navigating the challenges of growing up. A great teacher can make a powerful impact on their lives. Below is a list of different ways to motivate and engage students in your teaching and learning.

1. Know your students, and use their names often.
2. Plan every class; never try to “wing it.”
3. Pay attention to the strengths and limitations of each student. Reward their strengths and strengthen their weaknesses.
4. Set your room in a “U” shape to encourage interaction among students.
5. Send positive messages with posters, bulletin boards, and pictures.
6. Be sure your classroom is comfortable; check air circulation, temperature, lighting, and humidity.
7. Keep the laboratory well organized and efficient.
8. Vary your instructional strategies; use illustrated lectures, demonstrations, discussions, computers, tutoring, coaching and more.
9. Review class objectives each day, and help students see the scope of the entire program.
10. Make your instruction relevant. Show students how the content relates to them and the world of work.
11. Open each lesson with an introduction that captures students’ interest.
12. Move around the room as you teach; walk energetically and purposefully.
13. Be expressive with your face. Smile display your genuine enjoyment of your work.
14. Put some excitement into your speech; vary your pitch, volume, and rate.
15. Show demonstrative movements with your head, arms and hands; keep your hands out of your pockets.
16. Use words that are highly descriptive; give lots of examples which connect to prior student learning.
17. Consider students’ ideas and comments, even if they are inaccurate; correct in a positive manner.
18. Maintain eye contact and move toward your students as you interact with them.
19. Give positive feedback when students respond, offer ideas, perform a task correctly, come to class on time and bring their materials with them.
20. Foster an active FFA chapter.
21. Use appropriate humor in both teaching and tests to relieve anxiety, such as posting program-related cartoons and memes and use them on notes and handouts.

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22. Provide opportunities for students to speak in class.
23. Be available before class starts, during breaks, and after class to visit with students, and make this known to the students.
24. Return assignments and tests to students as soon as possible. Make positive comments and suggestions.
25. Teach by asking lots of questions during introductions, presentations, demonstrations and laboratory work.
26. Plan laboratory activities so all necessary tools, equipment, and materials are available when students are ready to use them.
27. Give students an opportunity to participate in the organization and management of laboratories.
28. Be aware of students who need assistance, and see that they receive it.
29. Plan the time so students keep busy with productive, relevant activities.
30. Be professional in your dress, language, school support, and respect for the profession.
31. Be consistent in your treatment of students.
32. Make sure your tests are current, valid, reliable and based on curriculum objectives.
33. Organize a “student of the month” award.
34. Invite parents, advisory committee members, and school administrators to visit your program for special activities.
35. Plan relevant study trips outside school.
36. Bring dynamic subject matter experts to your program.
37. Recognize appropriate behavior and reward it on a continuing basis.
38. Use a surprise, such as an interesting film, special break or similar activity, to reward the class for good behavior.
39. Use games and simulations to spark interest, provide a break in routine and supplement a unit in your curriculum.
40. Praise students in front of the class; reprimand them in private.



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41. Explain your rules, why activities are important and why some requests must be denied.
42. Involve all students in your teaching.
43. Provide clear directions for program activities and assignments.
44. Chunk learning into shorter learning activities. Students have difficulty maintaining attention after a longer period of time. A 45-minute class might have three 15-minute chunks, while a 90-minute period may have a variety of shorter and longer chunks, depending on the topic.
45. Plan hands-on labs for longer class periods to allow students to engage fully in the learning activity.
46. Provide opportunities for students to read alone and in a group.
47. Make home visits to new students entering your program.
48. Send positive reports home to parents periodically through notes or via online parent boards.
49. Use task and job sheets to help students remember skill steps.
50. Be enthusiastic about yourself, your students and your profession.

Source: Sullivan, R., & Wircenski, J. L. (1988). "50 Tips on Motivating Students". *Vocational Education Journal*, 63(3), 39-40.*

TEACHING METHODS

Effective teachers plan ahead for instruction which helps students learn. Students learn in a variety of ways, so it is important to vary the ways in which you teach. This section highlights various approaches you can use to help students learn agricultural skills and subject matter.

LECTURE

When people think about what teaching looks like, they often envision a teacher leading the class in a lecture about a particular topic. This approach usually involves the teacher preparing notes ahead of class and presenting the content to students. Considering how much class time is focused on the teacher, this teaching method is what is referred to as a “teacher-centered” approach. While this approach may be necessary for presenting complex technical content, it is not advisable to rely solely on this approach for class every single day; both you and your students will tire of this quickly!

- An effective lecture cultivates interaction between the students and the teacher, and between students, is clearly organized, and provides students with an opportunity to personalize the learning. Often teachers will present their notes on a topic through a slideshow presentation.
- Slides which highlight key points instead of listing paragraphs of information are more appealing and effective for learners to read. The effective teacher expounds upon these key points instead of reading them word for word off the slides.
- Many students do not know how to effectively take notes or how to focus on key ideas from a lecture. A teacher can help their students be more mindful of these things by modeling for them how to organize their notes, or by providing them with graphic organizers that allow students to organize the main ideas in a visual manner that streamlines the content. Additionally, teachers can walk around the room

while lecturing to ensure students are recording key points and to vary the mode of delivery.

DEMONSTRATION

A demonstration is the preferred method for showing students how to perform a new skill. Just as it is stated in the FFA motto, students “learn to do” by “doing to learn.” Typically, an agriculture teacher would prepare a short lecture to explain the purpose of the skill to be demonstrated, the steps involved, and illustrations to show how the skill is performed.

For example, if an agriculture teacher were to demonstrate how to properly trim the hooves of the school's dairy goats, they might explain the necessity of hoof trimming as it relates to animal health and production, illustrate on the board what a healthy hoof and an overgrown hoof look like, and walk students through the steps to properly trim hooves, all prior to entering the space where the goats are housed. Once the instructor and students are around the goats, the teacher would review the steps presented in the classroom, perform the skill themselves while explaining what they are doing, and then invite a student to trim a hoof in front of the class. Students should be provided with an opportunity to practice performing the skill independently and with guided feedback. It is essential that the teacher provide formative feedback to students to help them practice the skill properly.

It is very important that the agriculture teacher consider the following guidelines when planning a demonstration:

1. Scope of the skills to be demonstrated is appropriate for the experience of the students and the time frame of the class;

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2. Space and materials are available to properly and safely allow students to practice the skill to be demonstrated;
3. Materials are assembled ahead of time to maximize instructional time, and;
4. The teacher has practiced the demonstration in advance of teaching it. Rehearsing the demonstration ahead of time allows the teacher to identify points of confusion for students, where to best stand to allow all students to view the demonstration, and grouping and organization of materials.

DISCUSSION

When a teacher wants students to analyze and talk about specific prompts, a discussion approach can be the ideal teaching method. Discussion can occur as a whole class, in small groups, or in pairs, where students are responding to prompts or questions which the teacher has carefully and intentionally crafted to spur on conversation. It is imperative that prior to implementing the discussion method that teachers strive to build and maintain a classroom culture which is welcoming and inclusive, so that all students feel as though they can participate fully in the conversations being held.

- Discussion-based approaches can be particularly useful when brainstorming ideas, sharing perspectives and experiences, or tackling controversial issues. Often, the direction of the discussion is determined by the topics brought up by students. To ensure that students have grasped the major purpose of having a discussion, the teacher should write the purpose somewhere for students to see, and lead the class in summarizing the key points discussed that day.
- Asking the right questions is key to holding a successful class discussion. Questions should be purposefully designed to invite discussion. Asking generic questions like “What agricultural products are grown in our area?” could easily be asked of the whole class, while more thought-provoking difficult questions might require individual thought and processing time before sharing a response. For example, a question which a teacher would want to allow students

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more time to process prior to discussion would be “How can you contribute to the growth of agriculture in our county?” For more information on how to ask quality questions see the section on “Developing and Using Questioning Skills.”

ROLE-PLAY

Agricultural educators often pride themselves on providing students with an education that prepares them for the “real world.” Allowing students the opportunity to experience learning in a simulated situation through role-play can be an effective way to help students practice skills related to interactions with others. For example, role-play could be used to demonstrate the do’s and don’ts of a job interview, how to obtain a loan from the bank, or client/customer relations at a veterinary office.

- It is very important to consider the desired learning outcomes of the role-play as well as which students will play which roles. When selecting students to play certain roles, be especially mindful of the various identities which your students bring to your classroom: gender, ethnicity, race, sexual orientation, culture, abilities, and socioeconomic status. Selecting students to play roles which perpetuate stereotypes, especially those which are racially charged is never appropriate! You should also consider the social dynamics of the students in your class and how placing students in various roles might highlight areas of extreme discomfort for them. For example, selecting students who recently broke off a friendship or relationship to play a couple seeking a bank loan, would likely bring undue strain on to the students, and the rest of the class may pay more attention to the awkward tension between the pair than the actual skills being demonstrated through the role-play.
- Once the teacher has selected the appropriate students to play various roles, they should brief the actors on their expected performance. This does not necessarily mean that the students are provided a script, but they should be made aware of the desired outcomes of the role-play

performance.

- After the conclusion of the role-play, the agriculture teacher should be sure to lead the class in a reflective discussion about what they had just observed.
- This discussion should lead to a logical summary of the purpose of the role-play and connection with the day's learning objectives.

COOPERATIVE LEARNING

Cooperative learning is a teaching method in which the teacher selects groups of students to work together towards a common goal, typically to master content. One might also think of cooperative learning as a form of "group work." Through cooperative learning, students each contribute to a portion of the group project.

For example, a teacher might utilize cooperative learning to provide students an opportunity to apply their learning from a dairy management unit. Students would be merged into groups and assigned a scenario to evaluate which describes conditions on a dairy farm, and the group members work together to identify farm management practices which currently work well, which practices should be adjusted and improved, and which ones might be eliminated. The resulting project might be a written report, poster presentation, or oral presentation to the class. Another example of cooperative learning might be students working together to research various fuels used on farms, and then creating posters for the agricultural mechanics shop to educate their peers about proper storage and handling of each fuel.

- When selecting groups, the teacher should consider a variety of factors: student learning styles, organization, performance abilities, social interaction, and more. This is particularly important when assigning cooperative group projects which involve students who have IEP or 504 modifications for extended time. Peers in their group do not necessarily know that some students receive modifications, nor should you share this information with them (that is against the law!).

- However, you might assign the group project to a student with extended time modifications in advance of the rest of their group, so that they are given the extended time on the front end of the project, rather than on the back end.

It is important that students understand the purpose of the cooperative learning project, so that it does not appear as "busy-work."

- Students may have negative impressions of working with others based on their past experiences, so it can be beneficial to have your groups establish group expectations for performance at the beginning of the project, which will be used to evaluate their performance at the conclusion of the project. When conducting projects which require students to work together, the teacher should consider how to assess students: will you grade the end product exclusively or will you grade the process which students engaged in to create the end product? Will you use a combination of both process and product to determine individual student grades? It is imperative that the teacher identify how students will be graded ahead of the project, so that students are well aware of how their grade is being determined for that project. The use of rubrics is imperative, so the students understand how to receive full credit.

COLLABORATIVE LEARNING

At first glance, collaborative learning may appear very similar to cooperative learning. Some people might use these terms interchangeably, further adding to the confusion! Both collaborative learning and cooperative learning involve the use of groups to propel student learning, but collaborative learning is more about individual student thinking. Through collaborative learning, students test ideas, but are not aiming to come to a consensus as a group.

Working as a group capitalizes on allowing students the opportunity to talk out an idea and hear others' perspectives.

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When structuring collaborative learning, one should be sure to follow these steps to encourage positive collaborations:

- Allow for thinking time - Students think quietly on their own about how they might respond to the problem prompt.
- Partner talk - Students share their ideas with each other on how they would respond to the problem prompt. This is also sometimes referred to as “Think, Pair, Share.”
- Assign roles - The teacher assigns roles for a student to play within a group such as “recorder,” “materials gatherer,” “questioner” etc. Eventually the teacher should work toward students developing these roles on their own.

An example of how the agriculture teacher might implement the use of collaborative learning could be identifying the problem observed in greenhouse marigolds. The teacher could show the diseased marigolds to the class, and then ask students to individually think about what could be causing the problem, share with other students involved in their group, and then through their discussions, each student comes up with their own way of testing the marigolds to identify the source of disease.

PROJECT-BASED LEARNING

In project-based learning (PBL), students work on a project which engages them in addressing a real-world problem or answering a complex question.

- Typically, students will demonstrate their learning through the development of a product or presentation which is extended beyond the classroom. This project is one which is rather sustained in nature, occurring over several weeks, and possibly even months in the course. Planning a quality project can occur with varying levels of student input, but when first designing a project, the teacher may choose to exercise more control over the elements of the project, and as they become more comfortable with this teaching method, gradually place more responsibility on students to plan the project.
- To set students up for success, the teacher should follow these steps when planning a project:

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1. Develop an idea and connect it to state/national standards and other learning goals (such as your local school district’s initiatives).
2. Decide what major products or performances students will create and how they will be made public.
3. Map out the steps in the project and create a calendar.
4. Plan activities and lessons and gather resources related to completing the project.
5. Plan an engaging launch for the project which captures students interest and curiosity, generating student buy-in to complete the project.

Detailed resources related to implementing Project-based learning in your classroom (including worksheets, project examples, and planning guides) can be found from the Buck Institute for Education: <https://www.pblworks.org/what-is-pbl>

INQUIRY-BASED LEARNING

Inquiry-based learning, or inquiry-based instruction is a student-centered approach toward teaching and learning which has gained a lot of attention in recent years. Instead of focusing on student memorization of facts and figures, inquiry-based approaches focus on fostering critical thinking and analysis skills, creating opportunities for students to develop skills related to the process of creating new knowledge.

- Inquiry-based learning engages students in the use of the scientific method to solve problems. When students engage in inquiry-based learning utilizing the scientific method, they:
 1. question,
 2. investigate,
 3. use evidence to describe, explain, and predict,
 4. connect evidence to knowledge, and;
 5. share findings.

There are various ways which agriculture teachers can implement inquiry-based teaching into their classrooms. Below are links to resources which

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further describe inquiry-based learning and how you can implement it in your own classroom.

<https://edis.ifas.ufl.edu/publication/wc076>

FIELD TRIPS

Field trips can be a great way to situate student learning in context of actual industry sites. The teacher might plan a trip to local farms or agricultural businesses during class time which coincide with the content being taught in their current unit.

For example, if students were learning about integrated pest management techniques, the agriculture teacher might plan a field trip to a farm which utilizes IPM when growing their hothouse tomatoes. This could be a learning activity to introduce students to new concepts, or a culminating activity which summarizes the learning completed in a unit or course, demonstrating application of the learned concepts in a “real-life” setting.

In addition to taking field trips to farms and business during class time, the agriculture teacher might also plan all-day or multi-day trips to leadership conferences, industry conferences, Extension workshops, or farm tours.

Depending on the length and distance of the trip, the agriculture teacher will have to plan ahead appropriately to manage logistics smoothly.

- The agriculture teacher should be sure to plan for the field trip as they would for a lesson at school, identifying the purpose and learning objectives of the lesson while on a field trip. Additionally, the teacher should account for safe travel and transport of the students, making sure to plan for an accessible form of transportation for all students, particularly those students who may have disabilities.
- Leading up to the field trip, the teacher should prepare students for learning on the trip by reviewing the purpose of the trip and asking students what they anticipate about the learning experience. Oftentimes students are anxious about the setting, what they will be doing, and being in a new learning environment. The teacher can alleviate some of this anxiety by providing students with a “vicarious experience”

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or one which models what students will be experiencing on the trip. This could include showing students videos or pictures of what they could anticipate seeing.

- Upon return of the trip, teachers should guide students in a reflective discussion about what they learned and experienced, and provide students with an opportunity to apply or extend their knowledge gained from the trip.
- Remember to write a thank you note to your field trip hosts upon return from your trip!
- For more information about planning successful field trips, see <https://edis.ifas.ufl.edu/wc054>.

GUEST SPEAKERS

Guest speakers can be a great way to engage your students in the surrounding community. Instead of transporting your students to a local business, you might also have members of the community and local industry come into your classroom.

- The teacher might organize a guest speaker lesson in a few different ways:
 1. Individual speaker for whole class
 2. Panel of speakers in front of whole class
 3. Variety of speakers interacting with students one-on-one or in small groups
 4. External judges for class projects
 5. Demonstration of specific skill or technique
- Speakers can be a source of expertise on specific subjects which the agriculture teacher might be unsure of their level of knowledge, or serve as a reinforcer of knowledge. Sometimes students “tune out” their everyday teacher, but suddenly listen to someone new. Considering that agricultural education is a Career and Technical Education subject, the agriculture teacher has a responsibility to expose students to career options available in agriculture. Incorporating guest speakers who work in various fields of the agricultural industry can be one way of engaging students in conversations about possible paths

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after graduating high school.

- As in other experiences, it is important that the teacher prepare students for the learning experience involving guest speakers. In addition to behavioral expectations, the teacher should identify the purpose of inviting guest speakers to class, and share some brief information with the students about who will be attending their class that day. Students and the teacher could generate questions for the guest speaker ahead of time and share them with the speaker so that they can focus their discussion.
- It is also important to prepare the guest speaker for what it is you desire them to do during their time in your classroom. You should share with them the purpose of your inviting them to work with your students, including your learning objectives, and orient them to the technology available in your classroom. Often guest speakers are unsure of what format you would like to see their presentation, so they tend to prepare a set of slides and lecture during their time with your students. Sometimes, this can work well if the topic and the speaker are engaging to adolescent learners, but other times it is a recipe for disaster! It can be helpful to suggest to guest speakers to provide students with real-world scenarios related to things they have experienced on the job, and then ask students “What would you do?” leading a discussion in small groups instead of lecturing to students the entire 45 minute period of class time.
- It is also important that the teacher describe what students have already learned and what topics are coming up next, the classroom layout, anticipated interruptions such as the bell ringing in the middle of class, office check-in procedures, and how the teacher plans on introducing them and concluding class.
- While you are not legally allowed to identify specific students and their diagnoses related to disabilities, you should make the speaker aware of any special circumstances in class. For example, if you have a student with Tourette’s Syndrome who makes erratic gestures or blurts out random phrases, it can be helpful to let the guest speaker know that they might be

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interrupted on occasion; not all speakers are familiar with working with young people on a regular basis, so they may be unsure of how to best engage with your students.

In addition to preparing their students and the guest speaker, the teacher is responsible for coordinating a variety of other pieces of logistics when utilizing this approach. School districts vary significantly in what they require of school volunteers or guest speakers.

- Some districts will require that each outside community member stepping into the classroom have a background check completed, while others only require that the teacher notify the main office when they anticipate receiving a visitor to the school. Make sure to check with your administration before planning a guest speaker so that you can remain in compliance with the school rules and procedures. The teacher should also check with the guest speaker regarding their schedule well in advance of when they anticipate bringing them in to talk. It is important to make the speaker aware of what the school’s schedule is, particularly if it is a rotating schedule; the rest of the world does not operate on a bell schedule the way high school and middle school classes do! This can sometimes create challenges, particularly when there are weather delays or cancellations. Preparing a back-up plan in case of these emergencies can alleviate some of these challenges.
- While the guest speaker is presenting to students, the agriculture teacher should be an engaged member of the audience. Occasionally, the teacher might pose questions to the speaker to guide the direction of their talk to ensure that students are exposed to specific topics as a result of the presentation. The teacher should also be monitoring student behavior and engagement, as it should not be the responsibility of the guest speaker to discipline students.

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- After the guest speaker has left, the teacher should be sure to guide students through reflective conversations to summarize, apply, and extend the learning gained through the guest speaker experience.
- Write a thank you note to the guest speaker(s) thanking them for their time and expertise. Having students write the note and the whole class sign it can be a powerful way to model appropriate etiquette, and build relationships with members of the community.

CASE STUDIES

Case studies are stories with an educational message, typically describing an actual or very realistic scenario. Sometimes case studies are referred to as problem-based learning, as students are exposed to a problem through the story told in the case study scenario. Case studies are popular in agricultural education since they can describe situations which have occurred in the industry, at a student's SAE project or in the FFA chapter.

- Stories can be a captivating way to engage student interest and attention, and students are put in the driver's seat in terms of making decisions about how they would address the problems presented in the case study.
- A case study can be fairly brief, written in a way to generate conversation at the beginning of class, or it can be a much more detailed case which can guide the direction of learning over the course of a unit or entire course!
- Case studies are a great tool to guide in-depth classroom discussion, particularly over current issues or when modeling how to navigate challenging decisions.

The teacher can generate their own case studies based on their own experiences in agriculture, stories shared with them by others or observations of students at their SAE projects and FFA events. There are also a variety of case study resources available including a recent project of Texas Tech, the University of Florida, and Colorado State University, which assembled five different case studies and teaching materials related to recent agricultural issues receiving news media coverage.

TIPS

E-MOMENTS

In the teaching methods section you learned about methods you could use to broadly plan the delivery of your class and structure student learning. To personalize the learning to various student learning styles and engage students in learning which uses their whole body, agriculture teachers can use e-Moments (e = engaging). National FFA has a free resource which outlines 31 different e-Moment strategies for engaging students in higher-order thinking, learning modalities, and various multiple intelligences. You can download this resource here: <https://ffa.app.box.com/s/qk84mkgfg8w5j4eqdwpulybd492u1qiy>

DEVELOPING AND USING QUESTIONING SKILLS

You can improve your teaching by developing effective questioning techniques.

USE QUESTIONING DURING A CLASS TO

- stimulate thinking
- assess student progress
- check on clarity of materials presented
- motivate students to pay attention
- maintain classroom control
- provide repetition
- emphasize key points

Student success in answering questions is often determined by the teacher's questioning techniques. The way a student responds is determined by the level at which questions are worded: recall, comprehension, analysis or evaluation.

- Most questions teachers ask are simple **recall questions** that require students to remember factual information and recite it back.
- **Comprehension questions** require students to demonstrate understanding in addition to mere recall.
- **Analysis questions** require students to apply comprehension to a new setting.
- **Evaluative questions** ask students for their beliefs or opinions.

QUESTIONING SKILLS GUIDELINES

- Be sure the question is clear in your own mind. Think through what you want from the student before you ask the question.
- State the question without calling on a specific student. When you call on a student before the question is asked, every other student is free to ignore the question.
- After stating the question, pause while everybody has a chance to think of an answer. If no one answers, then (and only then) call on a student to respond. Wait a necessary amount of time to allow the students to formulate a meaningful answer after posing any question before you call on a student to answer.
- Ask only one question at a time. Multiple-part questions are confusing and are likely to result in student misunderstanding.
- Use recall questions first to be sure the students have the knowledge. Then proceed to comprehension and analysis questions. Follow those with evaluative questions.
- Expect students to write their answers before answering aloud. This balances the classroom playing field and encourages higher quality answers.

QUESTIONING SKILLS

SHIFT INTERACTION

Shifting the interaction involves redirecting the class discussion from one student to another if the first student's response is incomplete or incorrect and probing is not productive. Positive reinforcement should be provided to the first student and the same question redirected to a second or even third student.

When a student responds to your question with another question, you can use "shift interaction" to redirect the student's question to another student. If the student asks for an opinion, you may even redirect it back to the same student.

QUESTIONING EXAMPLES

Objective:	To relate soil slope to soil erosion and the use of terracing to control erosion.
Recall Question	"What causes most topsoil erosion?" (WAIT) (Name a student) (WAIT)
Student:	"I guess water does."
Probing Question:	"How does water cause soil erosion?" (WAIT) (Name a second student) (WAIT)
Second Student:	"It washes the soil away."
Probing Question:	"That's true, but how does it do that?" (Look at second student) (WAIT)
Second Student:	"It dissolves the soil."
Probing Question:	"That is partly right. It does dissolve some minerals, but what action of water causes the soil to move away?" (Look at second student) (WAIT)
	Second Student: ???
Shifting Interaction:	(Name third student) "(Name), can you help (name second student) with this?" (WAIT)
Third Student:	"As water moves, it picks up soil particles and carries them along."
Comprehension Question:	"That's right. Now, what does the slope of the field have to do with that?" (WAIT) (Name fourth student) (WAIT)
Fourth Student:	"The steeper the slope, the faster the water runs off, and that makes the erosion worse."

Information provided by William G. Camp, Virginia Polytechnic Institute and State University.

PROBING

Probing involves the use of further questions to help students answer the initial question or to provide a more complete answer. Effective use of probing is one of the most important questioning skills. Students may not know the complete answer but can provide a partial answer. In some cases, even though the question is clear to you, it might need to be restated or broken down into smaller pieces. Do not accept "I don't know" as the final response

TEACHING OUTSIDE THE CLASSROOM

As an agricultural educator, it is likely that you will spend a great deal of time teaching outside of the traditional classroom. Whether you find yourself teaching in the greenhouse, science lab, animal barn, or ag mechanics shop, it is important to follow safety protocols to ensure that you and your students stay safe. It is likely that your school district may already have these policies in place. The lists below are suggestions of things to keep in mind when teaching in these spaces.

- Require students to wear proper personal protective equipment (PPE) for all laboratory activities. Model this expectation by wearing proper PPE, in the proper way, at all times.
- Set ground rules related to acting responsibly and mature in the labs, and enforce it. Do not tolerate fooling around in the lab.
- Do not allow food, drinks, or gum chewing in the science lab.
- Encourage students to keep their work station clean and orderly. A clean work station is a safe work station. Additionally, make sure to have students clean up their work station and put away materials at the end of the hour.
- Provide detailed instruction related to disposing of all types of waste in the lab. Do not allow students to pour chemicals down the sink. This could be dangerous.
- Ensure that every student has a strong understanding of where emergency equipment is in the science lab, including the eyewash station, lab safety shower, fire alarm, phone, etc. Additionally, make sure to explain how to use each piece of equipment.
- Keep an open line of communication with your students and have them report all accidents, injuries, or breakages to you.
- Set a standard of handling all equipment, materials, live animals, tools, etc. with respect and care.
- Require students to dress properly during a laboratory activity. This may include pulling back long hair, removing dangling jewelry, and wearing closed-toe shoes that cover the foot.
- Do not allow students in the ag storage rooms or preparation areas unless given specific permission.

DIFFERENTIATED INSTRUCTION

An agriculture teacher will find that no class is the same as another, and that the diversity of learner abilities, learning preferences, and backgrounds vary significantly. It is important that the teacher meet the learning needs of all students, not just some or most of the students. Adjusting your teaching approach to meet students where they are at is a major component of differentiated instruction. Through differentiated instruction, teachers actively plan for student differences so that all students can learn.

Teachers should be sure to scaffold their instruction by chunking information into appropriate amounts, highlighting key terms, and modeling learning strategies. Scaffolding is done for all students in the class so that they can be successful in accessing the new material. Differentiation is what the teacher does beyond scaffolding to assist learners in further accessing the material, particularly when the student has a diagnosed disability which affects their learning. For example, the teacher might have students read an article about administering vaccinations to cattle. To scaffold their instruction, the teacher can review key parts of reading a magazine article with the class, select an article which chunks information in a visually-friendly way, and assign students to read the article in groups using various literacy strategies. For a student who has further challenges with reading, the teacher might select an entirely different article, still about the same topic of vaccinating cattle, but perhaps at a lower or more advanced level, depending on the learner.

Differentiating your instruction for learners with an Individualized Education Plan (IEP) or 504 is required by law. Typically the modifications needed to meet a student's needs will be outlined in their paperwork. You may also meet with special education teachers who are the case managers of students enrolled in your classes to identify what modifications would work well with students in your class.

For more information about scaffolding and differentiating your instruction see the following resources:

6 Scaffolding Strategies to use with Your Students: <https://www.edutopia.org/blog/scaffolding-lessons-six-strategies-rebecca-alber>

3 Ways to Plan for Diverse Learners: What Teachers Do <https://www.edutopia.org/blog/scaffolding-lessons-six-strategies-rebecca-alber>

IEPS AND 504 PLANS

If a student has an IEP or a 504 plan, it is your legal obligation to follow the plan and provide modifications as needed.

An IEP is a comprehensive document that essentially serves as a blueprint or road map for a child with special education services. It includes comprehensive information about a child's diagnoses, needs, recommended services, and accommodations, and anything else pertaining to the child's unique identifying factors. It is formal and legally binding, and is the result of a comprehensive evaluation.

A 504 plan is also a map or plan, but it deals specifically with how a child will be learning within the school, and does not equate to a diagnosis or even formal special education services.

To best serve your students have either an IEP or a 504 plan, work with your district's special education department.

QUESTIONS TO INITIATE REFLECTION

Participating in reflective self-examination will provide you with the opportunity to analyze the planning and delivery of your previous lessons and use the results to improve your teaching. Use the questions here as a guide for your reflective self-examinations.

North Carolina Department of Public Instruction
 Questions for Teacher Reflection (Clements, 2013, adapted)

SELECT AND DESCRIBE

1. Why have you selected this lesson to reflect upon?
2. To which class did you teach this lesson?
3. What are the demographics of the class (race, gender, age, etc.)
4. What was the content of the lesson?
5. Where does the lesson fit in your curriculum? Unit plan?
6. What did you teach before this lesson? After?
7. What were your expected outcomes?
8. What did you and your students do during the lesson/roles you played?
9. What kinds of questions did you ask?

ANALYZE

10. How did you present the material?
11. How were students engaged in learning?
12. Did students react to one another as well as to you?
13. How did things go? What was your overall impression of your effectiveness?
14. How did you measure what students learned?
15. Did you relate this to previous learning or students' shared experiences?
16. How did you account for diversity in the lesson?

APPRAISE

17. What was effective/ineffective about your teaching techniques in this lesson?
18. Did you achieve desired outcomes?
19. Were there outcomes achieved that you did not expect or plan for?
20. How did students react to the materials you chose or the methods you used?
21. Did the lesson achieve or help achieve a class or school goal (Common Core, AFNR)?
22. How does the lesson relate to your philosophy of teaching?
23. Describe the environment. Did it allow for intellectual comfort/risk-taking?

TRANSFORM

24. What techniques/materials from this lesson will you continue to use? Which ones will you stop using or modify? Why?
25. Based on how well the students learned the material, what will you do next?
26. How will you continue to develop your personal teaching techniques based on the internal/external feedback from this lesson?
27. What did you learn from your students?

OVERALL (W. Camp, T. Park)

28. What did you learn this week about teaching?
29. What did you learn this week about students?
30. What did you learn this week about schools and education?

QUESTIONS TO INITIATE REFLECTION

31. What did you learn this week about agriculture?
32. What did you learn this week about yourself?

QUESTIONS FOR TEACHER REFLECTION (Clements, 2013, adapted)

CLASSROOM CULTURE – QUESTIONS TO ASK ABOUT YOUR RULES & RELATIONSHIPS

1. Are the relationships that I have with my students helping or hindering their ability to learn?
2. Could the problems I have in my classroom be solved by pre-teaching my expectations or developing rules/procedures to deal with these issues?
3. Was my demeanor and attitude towards my class today effective for student learning?
4. Am I excited to go to work today?
5. Are my students excited to come to my class today? (How much does #3 impact #4?)
6. What choices have I given my students lately?
7. Can I explain at least SOMETHING about each of my student's personal lives?

CURRICULUM AND INSTRUCTION – REFLECTION ON ASSESSMENT & GRADING PRACTICES

8. Does my gradebook accurately reflect student learning?
9. Do my assessments really reflect learning, or merely task completion or memorization skills?
10. Why did I REALLY choose this particular lesson to cover this objective?
11. What evidence do I have my students are learning?
12. What new strategies have I tried lately that might benefit a student I am struggling with?
13. In what ways am I challenging students who are clearly being successful in my classroom?

CHECKLIST

14. What do I do when students aren't learning in my classroom?
15. Which students benefited from this activity?
16. Which students did not benefit from this activity?

COLLABORATION – ?S TO ASK OURSELVES ABOUT OUR PLACE IN A PROFESSIONAL LEARNING COMMUNITY

17. In what areas can I improve professionally?
18. Do my actions as a teacher show my belief that all students can learn at a high level?
19. Do my actions as a teacher show that I take pride in my work?
20. Are the relationships I have with my colleagues conducive to creating a collaborative culture focused on learning?
21. Are the relationships I have with my student's parents conducive to improving learning?

MENTAL HEALTH – ?S TO HELP TEACHERS MAINTAIN A HEALTHY OUTLOOK

22. What new ideas have I tried in my classroom lately to keep myself energized about teaching?
23. What have I done lately to relieve stress and focus on my own mental health, to ensure I remain an effective teacher?
24. What things am I currently doing that I could realistically make less of a priority in my profession?
25. How much time have I spent with my friends and family in the last two weeks?

TEACHING OBSERVATION AND EVALUATION

One of the best ways to improve your teaching practice is to observe other teachers, ask other teachers to observe you, and to observe yourself.

OBSERVE YOURSELF

Take every opportunity to be recorded during a lesson. If you can be recorded once a month, you will be able to watch how you do in the classroom over time. Take the video home or to a place where you can watch it alone (if you choose), and use this form to evaluate your teaching behaviors and style.

Alternately, you can audio-record your lessons for later critique. Place the recording device where it cannot be seen so you will be less conscious of being recorded.

OBSERVE OTHERS

In addition, find out who are the most successful teachers in your school or in neighboring schools, and observe their methods and techniques. Additionally, ask them to observe you. Observing other classes can help you identify strategies that may help you in the classroom.