

Teaching Tips/Notes



A Novel Approach to Learning Base Knowledge

Many students in an introductory science class are consumed with learning facts and base knowledge that will be useful to them once they take advanced courses in their major. Base knowledge learning can seem like a tedious task and often students lack the motivation to fully learn required information and therefore struggle in more advanced courses. This teaching tip describes a novel approach to teaching and learning base knowledge for a science curriculum that has been implemented for several semesters in an introductory equine science class. This project allows students some flexibility and control over their learning.

In an attempt to excite students about basic equine science knowledge, a project was designed that required each student to work independently to create a one or two page educational bulletin for each of eight main topics studied during a semester long course. The main topics were related to basic horse management and science identified by the instructor as the most important topics to learn in an introductory horse science class. Educational bulletin topics included: identification, behavior, health, nutrition, activity, hoof care, parasite/disease, and reproduction. Students are allowed to pick the specific area the bulletin attempts to educate about within those eight main topics. This allows the students some flexibility and ownership over their projects.

Instructions for the bulletin are as follows: Each student will prepare 8 bulletins in PDF format suitable for publication and distribution that can be used as a tool for educating horse enthusiasts about a topic covered in class. The flyer should be easy to read and understand, contain important take home messages about the topic, have quality and relevant graphics, consist of 1 or 2 regular (8½ by 11) sheet(s) of paper, and contain verbiage that is concise,

pertinent, and to the point. The flyer should be flat, not brochure style.

Students are provided with a grading rubric to improve their bulletins (Table 1). Grading categories on the rubric are horse-themed for fun. Students have access to the rubric prior to making their bulletin and after turned in; the instructor grades the bulletin using the rubric and gives the completed rubric and bulletin back to the student.

A crucial component to student success is to provide examples of “good,” “bad” and “average” bulletins. It is not enough to show students a graded bulletin, but rather a bulletin and the associated rubric with notes so they have an idea of the positive and negative portions of each bulletin and specifically what the instructor is looking for. Additionally, several of the “best” bulletins from each topic are selected by the instructor and displayed in the equine hallway of the animal science building each semester. Those bulletins are also shared on the equine webpage to help educate real horse owners. Both of these instances allow students a competitive incentive to work hard and create an outstanding bulletin.

The Equine Educational Bulletin cultivates basic equine knowledge that is essential to success in advanced equine courses. Students are given ownership over their learning and grade, which has been well received by students for three semesters. Anecdotally,

Table 1. Equine themed Introductory Equine Science Educational Bulletin Rubric

Points:	Rookie 0-7	Novice 8-15	Apprentice 16-21	Non-Pro 22-24	Professional 25	Total Points
Educational Component	No evidence that the flyer's purpose is to educate; or very minimal evidence	Flyer tries to educate, but contains major errors	Flyer is suitable for educating horse enthusiasts about a topic covered in class, but contains some errors	Flyer is suitable for educating horse enthusiasts about a topic covered in class	The flyer clearly demonstrates thoughtful consideration and does an outstanding job educating about the topic	
Verbiage	Verbiage on the flyer is either not concise, pertinent or to the point	Verbiage attempts to be concise and pertinent, but contains major errors	Verbiage on flyer is concise, pertinent, and to the point, but contains some errors	Verbiage on flyer is concise, pertinent, and to the point	Verbiage on flyer includes noticeable depth while being succinct and has supporting evidence	
Readability	The flyer is not easy to read or understand at all	The flyer is somewhat easy to read, but contains major errors	The flyer is easy to read and understand, but contains some errors	The flyer is easy to read and understand	The flyer is inviting to read and exceptionally easy to understand	
Graphics	The flyer does not contain graphics, or extremely poor graphics	Graphics are present but may not be quality or relevant	The flyer contains quality and relevant graphics, but contains some errors	The flyer contains quality and relevant graphics	The flyer contains excellent graphics that are thoughtful and relevant	
Final Score						

students taking advanced equine courses report that they have learned and retained the specific information from their bulletins, even several semesters removed from the project.

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Using a Video Response Tool for Course Assignments

Introduction

Educational practices theory suggests that student engagement and learning impacts increase when teachers “meet students where they are.” Educators have recently applied this theory to technology by incorporating social media and other technologies used by students into the classroom. For several years, I’ve questioned whether and how to “meet students” in their technology spaces and most importantly, whether this “meeting up” could generate positive impacts on student learning. My research led me to the use of video recording, a technology students increasingly employ in their social lives. Video recording tools offer a simple step toward meeting students in their technology spaces with the potential of increasing student engagement and learning through familiar technology practices.

Flipgrid is a tool that generates video recordings. Through the Flipgrid application, a teacher poses a question on his or her Flipgrid account and invites students to respond verbally with a video recording. A student uses a device equipped with a camera, such as a smartphone, laptop or tablet, to record his or her video response to the question. The Flipgrid application compiles the video responses into a “grid” that contains videos of all student responses and the teacher and students may view the videos. A teacher must obtain a Flipgrid license, offered at different pricing levels, but there is no account, log-in, registration or fee required for students to record a video response.

Procedure

I incorporated Flipgrid video recordings into my Agribusiness Law course, an undergraduate course of sixty students. I created three graded assignments using the Flipgrid application, each with a different approach. For the first assignment of the semester, I required students to introduce themselves and provide information about their majors, academic interests, familiarity with agriculture and legal topics of personal interest. I designed the introduction assignment to accomplish several purposes: to create a visual record that could help me learn and recall student names,

to gauge whether explanatory information might be necessary for students with little or no familiarity with agriculture, and to generate a list of topics students could select from for an independent study project later in the semester.

A second assignment required each student to explain a property rights conflict identified through research. My purposes for this assignment were to focus on current events and reinforce research and verbal presentation skills. For the third assignment, students viewed other students’ property rights conflict videos and completed a series of questions about the videos in writing. This assignment encouraged students to analyze current events and legal issues and reinforce writing skills.

Assessment

My first attempt to incorporate the video response tool into the curriculum was fairly successful based upon end-of-semester student evaluations and my observations during classroom discussions about the tool. Of the sixty students enrolled in the course, only one student did not have technological capability to complete the video assignments. No students raised questions or required my assistance with the Flipgrid application.

Students were most receptive to the first introduction assignment. They indicated that the assignment was enjoyable, demonstrated my interest in them and helped them meet other students. The introduction assignment proved very useful to me, as I referred to the videos many times throughout the semester to recall student names and used the videos to develop a list of legal issues of interest to the class for a later assignment. Additionally, the videos were an efficient “icebreaker” mechanism that established a positive tone for beginning the semester.

The second video response assignment was less popular with students, who reported that it was more difficult and uncomfortable than the first assignment. Some were frustrated by the three-minute limit established by Flipgrid, which required a few to remake their videos to fit within the time allotment. Several students stated that they would prefer to respond in writing rather than making a video response. Despite these comments, the second assignment responses were of consistently medium-to-high quality. Students appeared adequately prepared for the assignment and only a few students showed signs of discomfort while making their video responses.

Reactions were favorable for the third assignment, which required students to view and comment in writing on one other student’s video. Data available on Flipgrid showed that students viewed an average of fifteen videos for this assignment, suggesting a high level of interest in other students’ videos. The quality of written responses ranged more widely than the quality of the videos, however. Some written responses were lacking in substantive content but others exhibited inquiry, analysis and insight. Students reported that they enjoyed

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viewing the videos, but some admitted that their interest was for social rather than academic reasons.

Generally, I observed that these students appeared more comfortable giving video responses compared to students in previous classes which required in-class verbal presentations. A majority of the students confirmed this observation in their evaluations, but a handful of students reported that they were comfortable with both in-class and video presentations.

A few adjustments may improve the impact of the video response tool on student engagement and learning. The documented interest in viewing other students' videos suggests that I should explore more ways to use the video grid as a discussion board. Several students proposed employing the tool to stage a debate on a particular issue, an exercise that could challenge students to sharpen skills in organization, analysis and persuasion. I will also be prepared to provide the technology for students who do not have video recording capabilities, rather than allowing those students to replace the video response with a written response. Future plans include continued use, refinement and evaluation of the tool.

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Connecting Undergraduates to Dairy Farm to Fork

Introduction

It is no surprise that people have become disconnected from the origins of food as the number of farms in the United States has steadily declined for almost a century and significantly declined since 2007. As the number of farms decreased, options for food prepared outside of the home have dramatically increased including an abundance of fast-food restaurants, take-out options from restaurants, convenience foods, and commercially prepared frozen meals. These options have consequently displaced home prepared meals using locally produced whole foods. As a result we live in society lacking basic food literacy and some believe this change has contributed to the obesity epidemic. One of the learning outcomes of the undergraduate course Food Literacy at Utah State University is for students to define food systems and sustainability. The goal is to give students the opportunity to reconnect with the origins of the food they consume, while aiming to dispel myths about food from farm to fork.

Procedure

Collaborations were made with a representative from the Dairy Council of Utah/Nevada to arrange a

fieldtrip for undergraduates enrolled in Food Literacy. The fieldtrip includes a bus ride to tour one of the largest local dairy farms in Cache County, Utah, followed by a presentation and sampling of dairy products at the dairy processing plant Gossner Foods in Logan, Utah. The farm tour is scheduled as one of the weekly three-hour labs as part of the Food Literacy course.

On the bus ride to the dairy farm, the representative from the Dairy Council educates the students on the dairy farm's background, practices and owners. She then allows students to ask any questions they have about dairy farming and milk such as the benefits and drawbacks of pasteurized milk versus raw milk consumption and hormones in milk. At the dairy farm, students tour a carousel milk parlor, view milk tanks and cooling systems, interact with calves, and take a hayride viewing different barns housing various age-groups and stages (pregnant and not milking) of dairy cows. Students learn about how the dairy cows are tracked digitally, which assists with peak nutrition from their nutritionist allowing for optimal milk production, prevention of antibiotics in the milk supply, and monitoring of the health status of each individual dairy cow. Students are given time to ask any questions they have about the dairy farm and processing procedures to the dairy farmers guiding the tour.

After the dairy farm tour, students ride the bus to the same processing plant the milk goes to from the farm visited. At Gossner Foods' dairy processing plant, students watch a video presentation highlighting the history of the plant and the many local farmers that supply the milk to produce their high-quality cheese, ultra-high temperature processed milk, and delicious ice cream. Students are then given time to ask a Gossner employee any questions they may have. If the processing plant is running, the students are able to watch workers on the cheese production lines. At the conclusion of the processing plant visit students enjoy sampling a variety of Gossner milk products.

Assessment

The Food Literacy course has now participated in the dairy farm tour for four semesters. Each semester students are surveyed on whether they would recommend the tour for future students and nearly the entire class responds in agreement. One student said, "Being able to see the process of farm to fork is extremely eye opening" and another student, "I knew farming was a lot of work, but there is a lot I never thought of." The majority of students indicated that the dairy farm tour gave them a more positive perception of dairy foods and farming as shown by this students' comment of surprise by the "strict process to ensure safety and quality."

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Peer Pressure to Encourage Attendance in a Non-Majors Science Class

Many universities offer science courses taken by non-majors, satisfying a science core requirement. This kind of course provides a broad introduction to a discipline and, for many students, such a course may be the only science course taken. As a result, the role of these courses is to introduce the students to science and the scientific process, through a course both broad in scope and shallow in depth.

Because core courses can be broad in scope and shallow in depth, finding textbooks can be difficult. Some instructors rely only on class lectures, often made available electronically after the lecture. Without a textbook, class lectures assume a greater role, as does the importance of class attendance. Students miss class for many reasons (Van Blerkom 1992) and attendance may be correlated with course grades. A number of class structures, in-class activities, teaching strategies and institutional policies are used to enhance attendance (Sleigh and Ritzer 2001, Schreyer Institute for Teaching Excellence 2007), including penalizing non-attendance.

In Spring 2015, I taught a 1000-level Entomology science core course, entitled “Insects, Science and Society,” to 122 undergraduates. The students were distributed among class levels (freshman to senior) from more than 30 different non-science majors. I used an entomology textbook for background material in the first few weeks, but the last ten weeks of lectures were on topics not often found in textbooks, e.g., – “Insects as Weapons,” “Insects in Music and Insects as Musicians,” “Insects and Disease,” and “Invasive Insects and Supply Chain Management,” among others. The lack of a textbook to supplement lectures made it important that students attend lectures.

Although attendance was strongly encouraged, I did not require it. I used “clickers” (Turning Technologies, Youngstown, OH) for students to answer non-credit questions given during the lectures. Questions were given to help break up the monotony of a 75-minute class and to gauge whether key points were understood. Use of clickers also told me student attendance, without actually “taking attendance.”

All students want extra credit; mine were no different. Some instructors use extra credit to encourage attendance by calling a student’s name and asking a question, giving that student an extra-credit point for a correct answer. I tried something similar, to encourage attendance, albeit with a twist -- I used peer pressure. At the end of every class period, I called a randomly selected name. Rather than giving credit to one student, I rewarded everyone in attendance that day. If I called a name and that student was present, everyone present received one point (I knew who was there from their use of clickers). I then asked that student a multiple-choice question from the day’s lecture. If she answered correctly, everyone in attendance received another point. Asking a question 25 times over a 15-week semester

(two lectures per week) meant there were potentially 50 points, or 10% of the course’s possible 500 points.

Assessment

Did it work? First, attendance average 84%, which is enviable for an entry-level, non-majors class. Second, of the 25 students whose names I called, only once was the student absent – on a day when inclement weather had closed the university for half a day and I had already decided to give credit to everyone who braved the weather. Third, for the 24 questions I asked, the correct answer was given 20 times. Of the four questions missed, three occurred in the first two weeks of the course, and only one during the remainder of the semester. Apparently, the students realized I would continue the exercise, so they paid attention.

Although not tested, my observations of student behavior indicated the effort worked. I had several students tell me that a friend planned to skip a class, but the students each basically said, “You better not! If he calls your name and you’re not there, you cost me points!” – peer pressure. Second, during the first few weeks when a student whose name was called raised her hand, I would tell the class, “Jane Doe just earned you a point. You really ought to thank her,” at which time they would collectively say, “Thank you, Jane.” After about three weeks, when Jane Doe raised her hand, the class as a group, unprompted, said, “Thank you, Jane.” And third, when Jane Doe answered the multiple-choice question, I would ask her to tell the class which answer she chose. I didn’t need to tell the class if she was right – if they thought she was right, they applauded her answer. The one time later in the semester when she answered wrong, there was a class-wide groan. So, as a group, they were in attendance and they were paying attention.

Summary

Using extra-credit questions that rewarded all attendees appeared to enhance attendance in the entry-level, non-majors entomology class. Even more than encouraging attendance and ensuring that students were getting key information, extra-credit questions produced a sense of camaraderie in the class, not easily done in a large non-majors class. The questions and accompanying hype took on somewhat of a game-show feeling and students left class still talking about the questions. Did the students learn or retain the information? Maybe. But they were definitely in attendance and that had to enhance their performance on exams. Did I give away too many points for attendance? Maybe. But doing so also allowed me to ask test questions that were a little tougher.

Rather than requiring attendance (and penalizing non-attendance) or rewarding only one student per class period, rewarding all attendees and adding “peer pressure” to the process seemed to encourage attendance. Students benefited not only by attending class, but also by their friends and fellow students attending

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class. Positive reinforcement and peer pressure. As the entomological saying goes, “You can catch more flies with honey than you can with vinegar.”

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