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Alexander Smart

South Dakota State University, alexander.smart@sdsu.edu

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USING DIGITAL MOVIE MAKING TO TEACH THEORIES IN RANGE SCIENCE

Alexander J. Smart
Department of Range Science
South Dakota State University

Abstract

Learning complex theories in Range Science can be aided by having students use digital movie making technology. The objectives of this paper were to 1) describe the digital movie making process and 2) provide a qualitative assessment of its use in learning conceptual subject matter. Students were instructed in the use of digital movie making software and the process to create a digital movie describing the state-and-transition plant succession model. Ninety percent of the students thought that the movie making project helped them better understand the state-and-transition plant succession model. Students enjoyed learning the new technology and 40% said they would likely use it in the future. Digital movie making was a successful method to teach complex theories, such as the state-and-transition plant succession model.

Introduction

Range science is a multi-disciplinary science that involves a basic understanding of plant ecology, plant physiology, soils, hydrology, and animal science. We strive to understand our ecosystem through descriptive models. Some of these models are based on hypotheses tested under controlled environments, while others are based on theories developed by extensive field testing. In any event, these concepts are a challenge to the undergraduate to grasp.

Traditional lecture style courses that try to cover as much material as possible often make it difficult for students to grasp a deeper understating of the subject. In addition, students often memorize facts and later forget the information and miss the relevance or fail to see the connection the information has in the "larger picture" of their training. Also, written and oral communication skills learned in freshman and sophomore courses are not enough to train students to the levels desired by employers (Boyer 1998). Lastly, students have little exposure to solving problems that require team working skills that they will need once they graduate.

Teaching pedagogies based on case studies or more recently problem-based learning is the latest advancement in higher education trying to address the previously discussed inadequacies in traditional lecture style of instruction (McKeachie 2002). Problem-based learning is a multifaceted way

of teaching students through solving an open ended "real world" problem (Enger et al. 2002, Mehta 2002). Students work in groups to gather the information they need to analyze and solve the problem. Finally they are required to effectively communicate their findings in oral or in written format.

In 2003, South Dakota State University's President Peggy Miller outlined the Lead Forward Goals to produce "Excellence in SDSU Graduates" by 1) internationally competitive in academic preparation; 2) globally informed and prepared for a diverse world; 3) communication-able in speaking, writing and technology; 4) able to embrace change in positive ways; and 5) socially responsible (SDSU 2003). This project hoped to expose students to new technology and different teaching styles such that they would be better at communicating and embracing change in positive ways.

Creating a multimedia presentation such as a documentary film or video requires diligent planning of visual and scripted material. The advantage of this type of presentation for the instructor is that "winging-it" is not an option for students such as they might be tempted to do for a "live" presentation. A scripted presentation forces the students to think through how they are going to effectively communicate their ideas, because they have to write it down first.

Digital movie making capability is now readily available. Various programs usually are available with the purchase of most digital video cameras or come as part of the computer operating system. Video, audio, still pictures, and any created image from a graphics program can be imported into the movie making program.

The author has used this technology in teaching subject material for "Range Improvements and Plant/Herbivore Interactions" in the Department of Animal and Range Sciences at South Dakota State University. The objectives of this paper are to 1) describe the digital movie making process and 2) provide a qualitative assessment of its use in learning conceptual subject matter.

Methods

The concept of the state-and-transition plant succession model (Laycock 1991), which describes the nonlinear succession tendency of rangeland vegetation, was introduced in a 50-minute lecture. Students were randomly grouped into four teams of five individuals and assigned a 5-minute movie project to describe a "real world" example of how the model works. A 45-minute training session outside of class time was offered to each team. Training consisted of showing a 5-minute demonstration movie created by the instructor and a tour of the program and file management system. The students were instructed in the following sequence: 1) start with composing their narration script; 2) print their narration script in large font so it can be read easily without mistakes; 3) record their narration script using the movie making program narration feature; 4) produce graphics and text slides using

Power Point and save the slides as a picture file type using the JPEG extension; 5) import created slides and digital pictures into the movie making program; and 6) match the images to the narration using the editing feature of the program by trimming slides and using transitions.

Students had access to microphones, digital cameras, video cameras, computers with a writable CD-drive, and the Internet. Students were given time to work with their team on their narration script during one 50-minute class period. The rest of the time needed to complete the project was done outside of class. The instructor was available to assist students with the technological aspects of the project but, did not interfere with the creation of the content.

Students were surveyed the following questions. 1) Was the movie making project a useful tool to help you better understand the state-and-transition plant succession model? 2) Did you like learning the new technology? 3) Do you think you will use the technology in the future? The survey was conducted to help the instructor evaluate the effectiveness of the method of instruction.

The instructor graded the movie project based on a rubric which helped to keep the grading as objective as possible. Each individual student received an adjusted grade based on peer evaluation criteria that their team created. The peer evaluation was based on the perception of how individuals participated on the project. This process rewarded those who put in extra effort and penalized those who lacked in contribution. An adjustment factor was calculated as the individual peer grade divided by the average team peer grade. The final individual grade was calculated as the team project grade given by the instructor multiplied by that individual's adjustment factor.

Results and Discussion

The results reflected the dynamics of the teams and the personal strengths and weakness of individuals. It was readily apparent the level of enthusiasm differed among individuals and groups. The creativity among teams was unique in that each team had one item that the others did not have. For example, one team had music in the introduction and ending that grabbed the attention of the viewer. Another team drove to a prairie 20 miles southeast of campus and took pictures to illustrate their conception of the state-and-transition plant succession model. The narration voice of one team was well rehearsed and mimicked a professional narrator. Lastly, a team illustrated how range improvement practices were the necessary transitions from one vegetation state to another in a western South Dakota range site.

There were a few things that all teams had in common. Each team used pictures obtained from the internet (which was okay as long as they properly cited the picture and it wasn't copyright protected). They all used graphics and text created in Power Point that highlighted key elements explained in the narration. All teams used fading techniques between slides. Some teams added more animation than others.

The student survey indicated that 90% of the students thought that the movie making project enhanced their understanding of the state-and-transition plant succession model. Eighteen out of 20 students thought that the project was fun. Forty percent said they probably would use the technology in the future, while 30% thought they might use it and 30% said they would not use it.

In conclusion, the instructor viewed that the movie making project was successful in teaching the concept of the state-and-transition plant succession model. Feedback from the students reinforced the idea that they were open and willing to learn new technology. The learning process of how to organize audio and video content into a movie was verified by the innovative products that the students developed. Finally, the students made definite progress toward achieving excellence by becoming better "communication-able" and "change-able."

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BIOGRAPHY

Alexander J. Smart is an assistant professor/range scientist in the Department of Animal and Range Sciences at South Dakota State University. He teaches undergraduate range classes and graduate level statistics in animal science. His research focuses on grazing management interactions in native rangeland and introduced pastures.