Time Management Time Cards

I teach landscape architecture at Texas Tech University. One of the issues that students seem to have trouble with is time management. We've all struggled, I'm sure, with how to convince students to manage their time and avoid the last minute, "pull an all nighter," throw something together just before the deadline scenario. Never mind allowing time for a final review, edits, run test prints or even remember to click the spell check button. Providing interim or preliminary deadlines often times results in two all-nighters. Providing check lists, time lines or other tools seam ineffective to a generation who many would say grew up with their parents (usually the mother) acting as a scheduling secretary. Especially frustrating is backing off and given them more time to produce a quality product, only to see them once again, wait until the last minute.

Time management skills are something that is an important part of all our respective professions and we would love to be able to fit it into our curriculum. I found a tool that, with little instruction or training, seemed to have some impact on a group of students in my third year site design class. The class is a 4 credit design studio that includes two one hour lectures and two three hour design studios per week. Typically, design projects last from two to as many as six weeks. It is their first design class in our five-year professional degree program and it is at this point that we stress professionalism as a part of the studio experience. We also keep attendance for both lecture and studio as a matter of departmental policy. Consequently, I came up with the idea of using a time card. I developed a form the size of a half a sheet of paper, so two could be printed on normal letter-size stock. It listed the project name, a place for the students to write in their name, and a place to note the number of hours they worked on the project (usually the length of the studio).

Most importantly, and what took up most of the space was a box titled "Today's Goals:" with lines to list three to four goals or milestones for the day. When I came to their desk to help them with their project, I asked to see the time card and what they had written for that day. At the end of the studio, they dropped their time card in a box to receive credit for attending the studio that day. In all honesty, I rarely compiled the attendance but I kept the time cards just in case I might need to challenge a student's attendance record. Additionally, I stressed that almost all professional consulting offices have some sort of time reporting system since their clients are billed on an hourly basis. So it was not a menial task like punching a time clock at McDonalds. More importantly, it made time management a part of each and every studio. Whether or not they accomplished their goals for that studio (I did not check) at least they thought about the need to accomplish something that day and to make progress toward the end product. And no, they could not leave early if they reached their goals before the end of studio.

It is paper intensive system, but it seemed to help. You may be able to adapt it to a science lab, an agricultural mechanics shop, or any situation where students are working on a long term project. Good luck, and let me know how it works for you should you decide to try it or a variation on the idea.

Submitted by:
Charles H Klein
Assistant Professor
Texas Tech University
Landscape Architecture
charles.klein@ttu.edu

Using Prezi in the Classroom

Prezi is an online Adobe Flash-based presentation program. It differs from traditional presentation programs like Microsoft PowerPoint and Apple Keynote in that it is not based on slides. Instead, Prezi presentations exist on a canvas. The presentation is navigated by zooming in and out of different points on the canvas, as needed by the presenter.

There is potential for Prezi use in classrooms to be expanded, but as it is with any new technology, adoption will occur with a few before the majority is typically willing to adopt (Rogers, 2003). Gary Moore spoke of having the courage to try new things in his Blue Ribbon address at the NACTA Conference in Edmonton. The authors of this article have all used Prezi as an instructional tool and are offering advice to instructors who may be interested in mustering up the courage to try Prezi. First, the pros and cons of Prezi will be discussed. Then, suggested guidelines will be presented.

Pros

Prezi allows the creation of linear and nonlinear presentations. Designers have the option of creating a path that creates a linear presentation or can click on different objects in the presentation for a nonlinear presentation. By changing the sizes and positions of objects, designers can visually illustrate the relationship between concepts in the presentation to aid in student understanding of the pieces as well as the whole. Prezi also offers the ability for students to collaborate in class when using the program online.

Up to eight people can edit the Prezi at the same time. For those in larger classes, this could be accomplished by dividing students into groups. This allows for a construction and presentation of students' knowledge, which could appeal to different learning styles. Prezi is made more accessible for students and instructors through its free online format. Students can view the Prezi during and after class by using an online link.

Cons

Many of the negative points of Prezi stem from poor planning and understanding of how to use it effectively and differently than traditional slide-based software. For example, overzealousness in using the zooming features can create visual discomfort for viewers. Another possible downside of the program is designing it essentially as a PowerPoint without applying any of the added design benefits; this could result in a resemblance to an over-animated slideshow. Also, text-heavy presentations are not best displayed in Prezi. While you can print a PDF of a Prezi, because of the non-linear nature of most Prezi presentations these PDFs do not make good handouts or notes to provide to students. Because Prezi is still being developed and is free, occasionally designers may encounter glitches; however, they are few and far between.

Suggested Guidelines

Get creative. Prezi removes many of the restrictions that traditional presentation programs foster. How ideas are displayed and what visual components are included in the presentation are largely up to the presenter. As such, it is necessary to understand how the information can be displayed to optimize learning of the content. Be prepared to think outside the constraints of slideshows.

Customize. While there are presets available, there is also the ability to customize the presentation. For most people, customization means changing the colors of different elements, changing font faces, and the ability to add in a logo. For those with knowledge of Web coding (CSS), there is the ability to write code to further customize the presentation.

Illustrate relationships. By being able to alter the location and size of different elements in Prezi, relationships are more easily displayed than they would be in traditional slideshows. Because nonlinear relationships are more common than linear relationships, Prezi has an advantage over other programs.

Use movement correctly. The ability to move about the canvas is Prezi's strength and weakness. While the approach can create interest and facilitate learning, it can also be used excessively or ineffectively. Think about movement when you are implementing. Think about how it can best be used to facilitate understanding of the material.

Involve students. Students have the ability to be collaborators in Prezi. This process can get students more engaged in actively constructing knowledge. Another means of getting students involved is to allow them to navigate the Prezi on their own. Because there is the option to deviate from the path on Prezi, students can navigate the Prezi to look at information in a manner that best suits their learning needs.

Avoid text-heavy presentations. Prezi is a visual medium. While text can be displayed, Prezi is not the most conducive environment for displaying lengthy text.

Use it purposefully. Prezi should not be used simply because for its novelty factor. While this will initially garner student interest, novelty will wear off and student interest will fade. The authors of this paper have noticed this in their classrooms. Prezi has specific abilities. By using Prezi with these abilities in mind, instructors can be better able to garner student engagement.

Conclusions

The decision to use Prezi is the decision of the instructor. Be mindful of its capabilities and its limitations before implementing it into courses. It has a place in education, but it will not become the dominant presentation medium. For more information or to view tutorials, please visit www.prezi.com.

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Submitted by:
Quisto Settle
University of Florida
Gainesville, FL 32611

Katie M. Abrams
University of Illinois
Urbana, IL 61801

Lauri M. Baker
Kansas State University
Manhattan, KS 66506

AddingValue to Graduate Education: The Comprehensive Examination

Virtually all graduate study requirements for M.S. or Ph.D. degrees include a written comprehensive and an oral exam, the latter most often a presentation of thesis or dissertation results. The written exam takes many forms, but the goals are to test the candidate for technical competence and affirm that the prior program course work has been effective in bringing the candidate to an acceptable level of understanding of the discipline in which she or he has

been immersed. Although long accepted as a useful hurdle on the path to a degree, for some exceptional students who have already demonstrated competence in multiple ways, especially at the Ph.D. level, this has become an unnecessary chore for both students and supervisory committee members. All would rather devote quality time to something valuable for the student, rather than just busy work to re-validate what everyone already knows about the candidate. We have tested a new method of examination in a few situations, one that is focused on the student's ability to explain science to a lay audience.

Learning objectives are to 1) encourage the student to reflect on the broad importance of the courses and research project and how this can impact society, and 2) practice writing for a general audience about the topics of courses or research. With current skepticism about science and our research in many quarters, it is increasingly important to find effective ways to communicate with the public.

Methods include the framing of comprehensive exam questions that lend themselves to interpretation, clear articulation, and application to society's perceived challenges – quite a different challenge than writing for a journal. A recent comprehensive exam at University of Nebraska for a PhD student in practical applications of his research on use of diverse cover crop mixtures in sustainable farming systems included these five questions:

1. Select one important topic in soil microbiology relevant to organic agriculture and write an essay for a popular publication
2. What is a standard error? Explain this calculation and concept to a general audience outside of academia
3. Your research on mixtures of cover crops has potentially wide impacts on design of future farming systems; describe this practice to a general audience
4. Write an essay for the general public discussing the environmental benefits and drawbacks of agricultural intensification compared to organic agriculture
5. You have just been appointed to a farming systems and organic agriculture position at a major Land Grant University; using the advertised position description, prepare a draft of your first Hatch project

There were no further guidelines, nor time constraints put on the student to answer these questions, but rather he was urged to do as well as possible with the idea of submitting one or more of them for publication in a general interest journal in agriculture, natural sciences, or related area.

Observed impacts of this type of comprehensive exam were both immediate and striking. The student said up front in a meeting with the committee that this assignment "raised the stakes" of the exercise, since he understood that some of the results would actually be published, and not just languish in the file of his supervisory committee. It was also said to be a new way of looking at science, and a challenge to write in a way and with language that was comprehensible to a lay audience. In fact, by the time of the oral exam over the questions, one had already been submitted and accepted for publication in PrairieFire Newspaper, a publication from Lincoln, Nebraska that circulates across the Great Plains (Wortman and Francis, 2011)..

Another PhD student in Agricultural Leadership, Education and Communications was afforded the same opportunity as an alternative to the traditional comprehensive examination. She had two articles accepted and published in this same regional publication, in the June and July 2011 issues (Quinn and Francis, 2011a, 2011b). These follow on a theme of two previous student articles in PrairieFire, one last August on the history of organic certification, and one early this year on the importance of introducing local and organic foods into schools.

Supervisory committee members for these students were equally pleased with the results. Since they already had the grad students in class and knew their technical capabilities, it was good to present a new type of challenge rather than revisit topics where the candidate's legitimacy had already been established. We do recognize that this approach is not necessarily for all students, and that the comprehensive written exam is an important way to assess technical knowledge. But for some students we feel that this is an innovative approach to broadening the capacities of a young professional to reach the general public.

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Submitted by:
John Lindquist, Sam Wortman, and Charles Francis, University of Nebraska-Lincoln

A Teaching Module on Ozone as an Air Pollutant and its Effects on Plants

Since many universities and colleges offer limited environmental courses designed to educate students about air pollution during the summer (the height of the "bad" air quality season in the US) and because there are no known programs that teach air pollution effects on vegetation in an interactive manner, we developed a teaching module using ozone as the

example air pollutant (and its effects on plants). This module is available for download on the web and can be inserted into preexisting courses, serve as a foundation for mini-courses, or sections of it used as individual lectures or exercises. Within the module is a unique exercise where students compare time-lapse photographs, illustrating the onset of ozone injury on plants recorded during a summer, with the ozone data collected during symptom development. This allows the students to relate the severity of the ozone-induced symptoms with the ambient ozone levels.

Ground Level Ozone as an Air Pollutant

Ground level or tropospheric ozone is a major air pollutant in many industrial areas around the world affecting the human health, environment, and the economies of many countries. Ozone is one of the criteria pollutants designated by the Clean Air Act of 1970 to be monitored across the US to determine the safety of the air for human and ecosystem health. The ozone season, when the highest ozone levels occur and cause the greatest amount of concern to human health and vegetation injury, is typically mid-April through late October in much of the US. Human health problems associated with ozone pollution include coughing, congestion, chest pain, and throat irritation; and ozone can worsen respiratory diseases such as asthma, bronchitis, and emphysema. Elevated levels of ozone often experienced during the ozone season can cause damage to trees, agricultural crops, and other vegetation. Symptoms of plant injury due to ozone include leaf stipple, chlorotic mottle, tip burn, late season leaf yellowing, premature defoliation, and decreased crop yields.

Development of the Ozone Damage on Plants Exercise

Since plant damage from ozone in the landscape occurs during the summer when most agricultural and environmental courses are not being taught, we developed an exercise (entitled Environmental Crime Scene Investigation) using time-lapse photographs of the onset and development of ozone-induced injury on plants. We also supplied the recorded ozone levels during the time when the photographs were taken. This allowed the students during their regular semester courses to establish relationships between leaf injury and ambient ozone levels.

Photographs of ozone-induced leaf injury were taken for five ozone-sensitive forest and agricultural species located at the Air Quality Learning and Demonstration Center (located on the Penn State campus) during a recent ozone season. The plant species photographed (common milkweed, black cherry, yellow poplar, Chambourcin grapes, and tobacco) had been previously shown to be sensitive to summer ambient levels of ozone in central Pennsylvania. A Pennsylvania Department of Environmental Protection air quality monitoring station, located at the Learning Center, collected weather data (temperature, wind speed and direction, solar radiation, relative humidity, precipitation, soil moisture, and visibility) on a daily basis and monitored air pollution concentrations for nitrogen dioxide (NO2), nitrogen oxides (NOx), carbon dioxide (CO2), carbon monoxide (CO), particulate matter (PM10 and PM2.5), and ozone (O3). The air pollution data are collected as mandated by the Clean Air Acts and are reviewed the by US Environmental Protection Agency.

After analyzing the photographs for onset and development of visible ozone injury on the leaves (Figure 1), the air pollution data (Figure 2) were examined to determine if high levels of ozone pollution were present immediately prior to the dates when symptoms occurred, or if the injury was the related to low chronic concentration over an extended period of time. Since other environmental factors can have an effect on how much or when symptoms occur, select weather data were also evaluated.

The Development of the Ozone Teaching Module

A larger more comprehensive ozone teaching module that incorporated the in class activity was then developed. The purpose of the module was to educate students regarding ground level ozone pollution. The length of the ozone module is approximately three hours; however it includes several individual portions that could be taught as smaller segments. The contents of the module include an overview; two power point presentations, both containing 38 slides; a homework assignment; an in-class activity; a quiz to test the students before and after completing the module; and an answer key for both the in class activity and quiz.

The first power point presentation in this module provides an overview of ground-level ozone, how the pollutant is formed and transported, and the importance of ozone to human and environmental health. The second power point presentation focuses on how ozone pollution affects vegetation. Both power point presentations contain several photographs, charts, animations, graphs and activities as to keep the students engaged and cater to all learning type techniques. For the benefit of the educators who use the module, important information and suggestions to assist in presenting the information are written in the notes section under each slide in the power point presentations.

The next section of the module is the in class exercise that was developed utilizing the photographs and real-time weather and air pollution data. The purpose of this activity is to allow the students to use the knowledge that they gained during the power point presentations to better understand the environmental impacts of ozone pollution. By the end of this exercise the students should be able to determine the connection between the plant injury and ozone levels when shown photographs and weather and air

pollution data. The format of the module exercise is a word document so new sets of photographs and weather data can be easily inserted to maintain the module updated with current information.

Testing the Module

After the module was developed, it was presented to students (n=16) in the Agricultural and Extension Education (AEE) 313 course at Penn State University. The students in this course were pre-service student teachers about to begin their student teaching term. A 15 question, multiple-choice quiz was used to determine the individuals' knowledge on the subject matter prior to being presented the information in the teaching module. Following the quiz, the class was presented with the first power point presentation, followed by a short break, the second power point presentation, and then the in-class activity, during which the students were allowed to work in groups. At the completion of the activity, answers were discussed as a class and any last-minute questions were answered. To test the effectiveness of the module and for statistical purposes, the students were given a post-module quiz that was identical to the pre-module quiz. A paired t-test was conducted on pre- and post-module quiz results to determine the effectiveness of the teaching module.

The results of the paired t-test indicated that the confidence interval {95% CI for mean difference: (-7.60444, -5.27056)}for the mean difference between the two quizzes did not include zero, which suggests a difference between them. The small p-value (p=0.000) further suggests that the data are inconsistent with the Null Hypothesis (The mean difference between the two quizzes will be equal to zero), which means that there is a difference between the mean values for the two quizzes. Specifically, participants did better on the post-quiz (mean = 13.06) than on the pre-quiz (mean = 6.63). Thirteen out of the 16 participants received over 80% on the post-quiz, whereas none of the sixteen participants received over 80% on the pre-quiz.

Several of the AEE 313 students who were presented with the module, expressed interest in using it during their student teaching term and feedback was received from three of these individuals. One student teacher used the module in a plant science class containing 23 students. Feedback from this teacher was "…the students did enjoy it and found the information surprising and interesting…they really thought it was neat that they could check the ozone level in their area and see surrounding areas". The second teacher who provided feedback was using the module in his/her greenhouse class, consisting of 28 students. Unfortunately, due to the structure of the class the student teacher was not able to present the module all at one time but instead in 15-minute increments. Therefore, this individual could not provide much detail on the students' reaction to the module. The third individual who provided feedback taught the module during a plant physiology portion of their class, which contained eight students. This student teacher said about the module, "…it not only tied everything I taught in the unit together, it allowed students to learn about the effect of ozone on these plant processes. The students really enjoyed the links to the internet and all the graphics". However, this teacher also mentioned that the students didn't do very well on the quiz, which she found confusing, considering the students interest in the subject matter. Although some feedback was negative, the majority was positive and provided further evidence that the ozone module can be successfully incorporated into high school curricula.

Availability of Teaching Module onto the Internet

The module is available for download at various public websites including the Pennsylvania Department of Environmental Protection (http://www.portal.state.pa.us/portal/server.pt/community/curriculum_class_activities/13906) and Penn State University (http://www.personal.psu.edu/drd10/Ozone_Learning_module/Ozone_Pollution_Teaching_Module.html). It is envisioned that the module could also be used as an outreach tool for public and private institutions.

Submitted by:
Sabrina Chrzanowski Haydt, Donald D. Davis, Tracy Hoover, and Dennis R. Decoteau (drd10@psu.edu), Penn State University

Visioning Future Scenarios

Practical agronomists and other applied specialists in agriculture become experts in their narrow disciplines through academic courses and research for advanced degrees. Fulfilling this role as experts, they often follow careers in research, education, public sector extension, or private advising where they are expected to provide appropriate advice to farmers based on their experience and training. Although this "expert-client" relationship is an established norm and comfort zone for both parties, it may not help them explore the range of potential solutions that could emerge from a more holistic, systems-oriented strategy that leads to future visions and scenarios (Barker, J., 2001; Parker, M., 1991).

Learning objectives in agroecology courses are to: 1) examine multiple alternatives or "scenarios" that could be adopted by farmers to solve their production challenges, 2) evaluate the potential influence of any change in practices on total crop, animal, or crop/animal system performance, and 3) assess a priori the possible and likely production, economic, environmental, and social impacts of such changes. Our experience has led to development and refinement of visioning sessions as a robust method for reaching their objectives.

Methods we have used over several years have included virtually driving through or taking a balloon ride across the landscape, drawing rich pictures to illustrate major farming system components and connections, and discussing future goals and aspirations with clients who will be the ones to implement any effective change. Often we ask students to observe, to visualize, to imagine, and especially to suspend judgment as they think about what an ideal system could be, especially unencumbered by current constraints.

Observed learning outcomes have been accumulated over the past decade of conducting visioning exercises in a number of educational venues. Evaluation of the visioning process puts this into context as one important step toward describing future scenarios. Students imagining a future desirable situation on the farm that will meet the farmer's and family's goals try to think beyond the current systems and constraints to consider what is possible in the future.

We have found that students who view the farm from a small distance are better able to focus on the entire operation, and not on the specific weeds, nutrient deficiencies, and fungus diseases on the leaves of the crop that often get in the way of observing the larger picture. From a position looking down on the farm, it is possible to see where the various crops and animal enterprises are located, and how major interactions may be possible because of the physical juxtaposition of the elements. From above, it is also possible to see how this farm fits into the surrounding rural landscape and how its key elements impact the farm. Also in this slightly detached mode, they can better envision possible changes or scenarios for the future that could help the client better meet his or her goals.

We do urge students to suspend judgment in their visioning, and not to jump to obvious solutions or recommendations, since these too often seem to represent their own disciplines or some pre-formed ideas about what should be. Observing from a small distance it is possible to envision new elements, innovative connections, and potential emergent properties from a reorganized or more diversified system.

Finally, we insist that the student teams come up with a series of potential future scenarios to present to the clients, rather than specific recommendations. In this way, there are multiple and creative ideas presented, and the clients can pick and choose the elements that they consider most useful to help them meet their goals. As a part of the evaluation, student groups try to calculate or at least imagine the impacts that any change in one component or addition of an enterprise will have on whole system performance – in production, economics, environmental, and social dimensions – and not only in the short term. Sustainability is a long-term concept, and we need to imagine and project the impacts of changes in systems into at least the medium-term future.

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Submitted by:
Geir Lieblein, Tor Arvid Breland, Suzanne Morse, and Charles Francis University of Nebraska-Lincoln