TEACHING PORTFOLIO

Bo Ning
Postdoctoral Associate
Department of Statistics and Data Science,
Yale University,
New Haven, CT 06512
bo,ning@yale.edu
919.961.7956

Table of Contents

I. Teaching Philosophy

My teaching philosophy consists of three parts: 1) developing course plans, 2) motivating student learning, and 3) fostering effective communication. Each part is essential and interrelated with the others.

Course plans are essential, not only for instructors to track teaching progress but also for students to keep up with learning. Hence, making course plans needs to be a priority. My own course planning regimen consists of three objectives: 1) choosing appropriate course materials (e.g., datasets), 2) devising a teaching schedule that accommodates the varying difficulty and importance of the lessons, and 3) designing appropriate homework sets to promote learning and retention. In light of these objectives, I incorporate teaching tools that consistently emphasize the content of the course. For example, I might use R Shiny to make interactive figures that show how an MLE changes with the sample size or create an online quiz that reinforces the difference between the confidence interval and the credible interval.

Of course, different students have different learning styles that require the use of different teaching tools. There are many methods of classifying learning styles (Felder & Brent, 2013). One method categorizes learning styles into four pairings: active and reflective, sensing and intuitive, visual and verbal, and sequential and global (Felder & Silverman, 1988). In my classes, I sort students into learning styles by means of a survey. The survey contains questions about student preferences, such as whether they prefer working homework as a group or as individuals, whether they prefer to visualize or verbalize abstract ideas, etc. Teaching tools are developed accordingly. If the majority of students prefer learning in groups, then I assign group homework more often. If students prefer to have animations, then I create interactive figures.

However, even the best laid course plans will go awry if a teacher fails to pay attention to student motivation. Student motivation is directly connected to attention, which is itself related to learning types. There are three types of learners: deep learners, who are intrinsically motivated; surface learners, who only complete the required tasks; and strategic learners, who vary their strategies depending on their individual interests (Vajoczki et al., 2011). Again, using a survey is helpful for identifying the learning type of the majority of each class. In my intake survey, I ask questions about student backgrounds, their purposes in taking the class, and their expectations about learning outcomes.

It is easy to motivate a class of full of deep or strategic learners---they are self-motivated. Motivating surface learners, however, is difficult. I use multiple strategies and teaching tools to engage (and re-engage) surface learners. At the beginning of my classes, I like to give online quizzes: The element of competition increases class focus, and the immediate feedback loop causes students to recognize content issues that need to be addressed with the teacher. When attention begins to fade in the middle of class, I divide students into groups for discussion and problem solving. In every class, I try to integrate the newest programming tools (e.g., R Markdown and IPython Notebook) and platforms (e.g., GitHub) because students are always interested in new technology---and anything that better prepares them for the job market.

While course plans and building student motivation are both essential, the core of teaching is communication. No teaching happens without words. Without expressing class content in clear and well-structured lectures, students are easily confused and demotivated. Clear feedback channels are necessary to avoid miscommunication. As has been seen, surveys are incredibly helpful, but I also heavily rely on what I learn in office hours. Office hours allow me to explore how I can create a better learning environment for each student---as well as respond to their individual needs and interests.

II. Artifact of Teaching

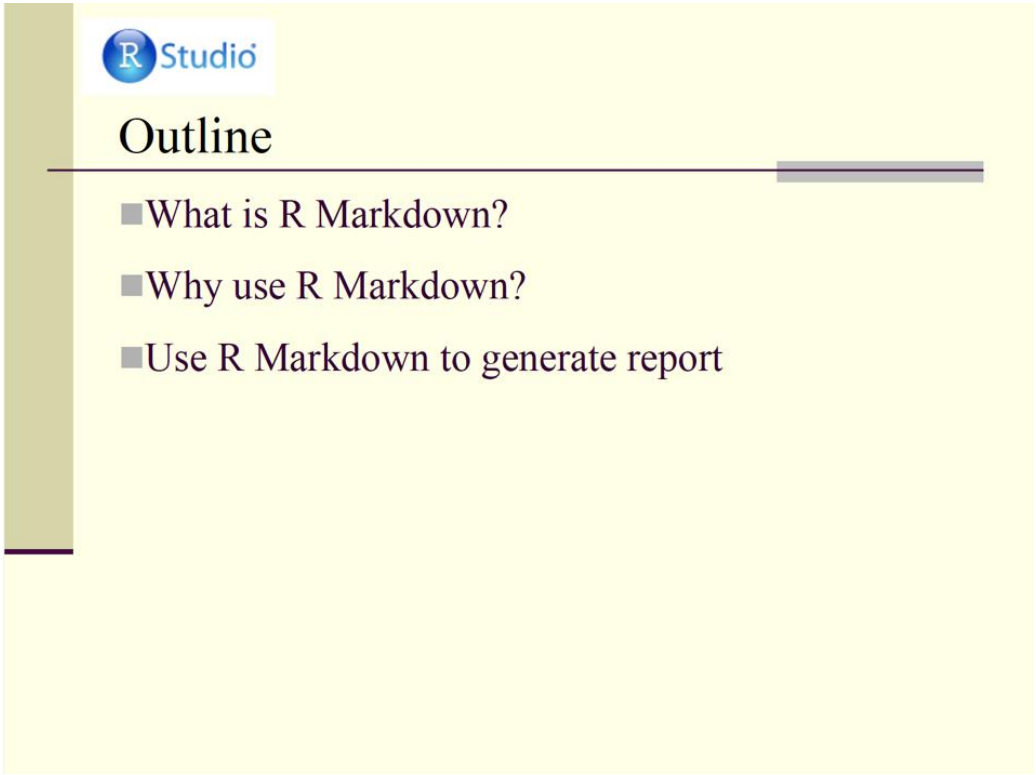
A. Description

The artifact provided in this section is the class material I designed for ST 555 Programming I in 2015 Spring semester. The material is to introduce R Studio, a statistical programming tool, to master level students in major or non-major students in statistics. The goal is to let students be able to do R programming using R Studio and to create a dynamic document using R Markdown.

B. Artifact

I created three PowerPoint slides to introduce R Markdown and R Studio. In this subsection, I will provide three examples: introduction part of one slide; content of the material; designed practice questions.

1. Introduction part



2. Main contents of the materials

What is R Markdown? Why Use?

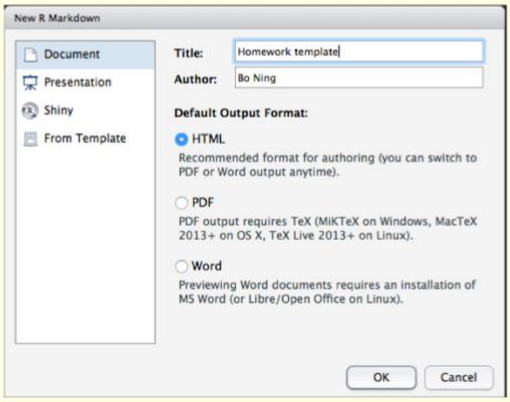
- R Markdown is a dynamic document for R
- It combines the core syntax of markdown (an easy-to-write plain text format) with embedded R code chunks that are run so their output can be included in the final document.

(from http://rmarkdown.rstudio.com)

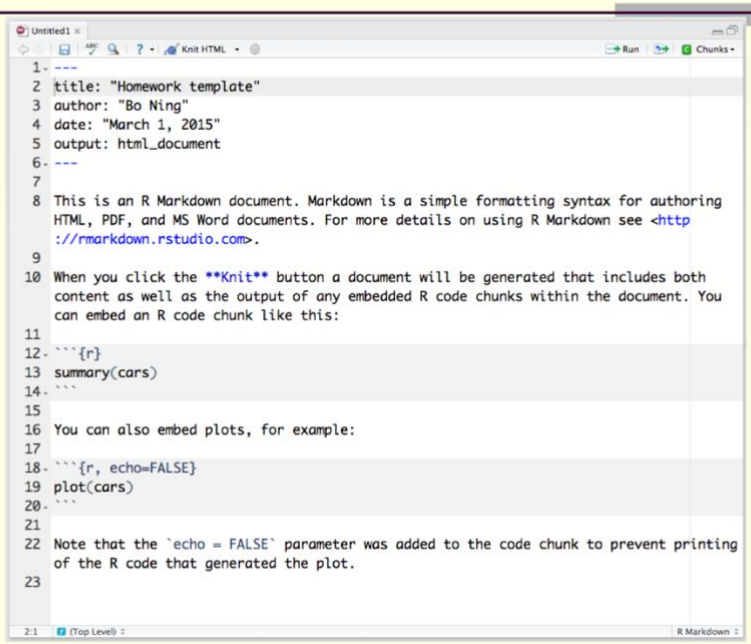
- New technology, widely used
- Integrate texts, R code and output together in one document in a nice looking way
- Automatically generate dynamic report for R programming

Open R Markdown

- Find out  button in the left upper side of RStudio.
- Click  , then click 
- Choose "Document", enter "Title" with "Homework name" , enter your name, and choose format. Any format is fine. Then click "OK".

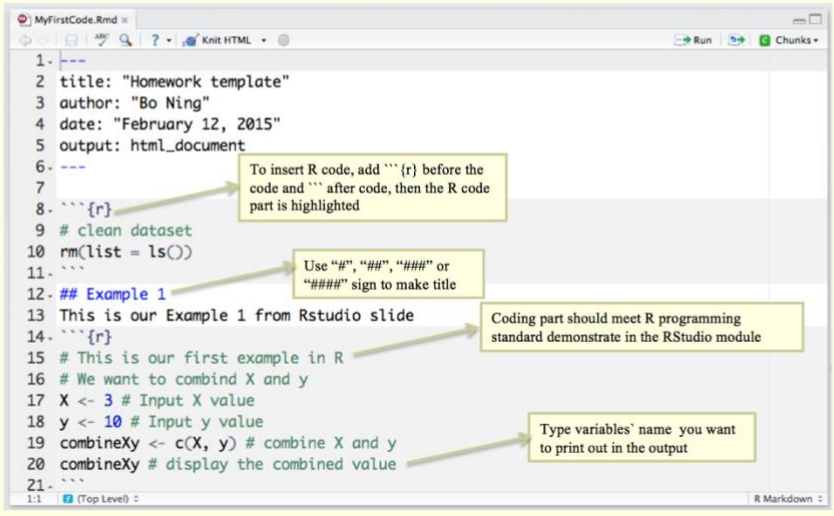


Open R Markdown



Write code in R Markdown

- Let`s start to write our first R Markdown file
- Includes title (question number) and "rm(list = ls())"



Generate report

- Here is the report generated by "Knit HTML". See what happened?

3. Practice questions

ST555 Homework 12

When you have completed this HW, submit via Moodle the following:

I. Submit a .rmd file (R Markdown file)

II. Submit a .html, .pdf, or Word document generated by R Markdown that contains the answers to the questions and the code utilized to obtain these answers. You will not receive full credit without both the code and answer printed out.

III. Meet the R Programming Standard

C. Reflection

When I create this material, I used the four “how”s principle as I mentioned in my teaching philosophy. I made the PowerPoint style consistent with other materials used in this class. I summarized the main points of slides in the introduction page to let students know the plan of the material. I listed the reasons why learning R Markdown is important, and I provided a nice output created by R Markdown to motivate student studying the material. I provided very detailed instructions of how do create the output, and pointed out some parts I feel need to notice from the experience when the first time I started to learn it. And I asked them to submit their homework by using R Markdown for practice purpose.

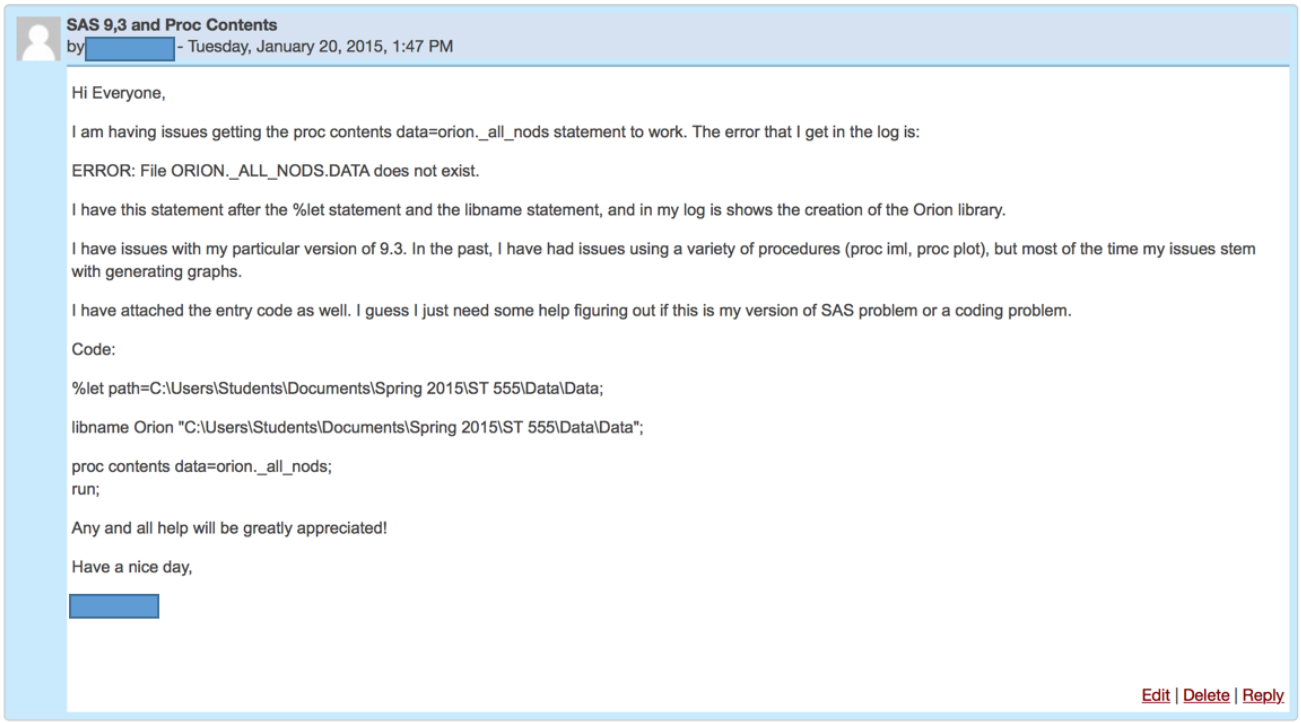
The materials have been successfully taught students how to create R Markdown file by noticing there are very few questions asked about the materials and students demonstrated their ability to use R Markdown by grading their homework. How thing I haven’t done for this material is to ask students feedbacks for this material. In the future, if I had a chance to re-use this material or create a new teaching material, I would like to ask my students to give feedbacks, either by using questionnaire or collecting feedbacks from the class.

III. Artifact of Student Learning

A. Description

This artifact is one of many discussions from online discussion board of online course in 2015 Spring: ST 555 Programming I. Since for online course, students may not be able to meet with each other in person, we created the online discussion board to provide a tool for them to help each other for any course related problems. As a TA, my goal is to manage the online discussion board by encouraging students asking questions, answering students questions and collecting those questions into my “ST 555 Programming Learning Kit”.

B. Artifact



SAS 9,3 and Proc Contents
by [redacted] - Tuesday, January 20, 2015, 1:47 PM

Hi Everyone,

I am having issues getting the proc contents data=orion._all_nods statement to work. The error that I get in the log is:

ERROR: File ORION._ALL_NODS.DATA does not exist.

I have this statement after the %let statement and the libname statement, and in my log is shows the creation of the Orion library.

I have issues with my particular version of 9.3. In the past, I have had issues using a variety of procedures (proc iml, proc plot), but most of the time my issues stem with generating graphs.

I have attached the entry code as well. I guess I just need some help figuring out if this is my version of SAS problem or a coding problem.

Code:

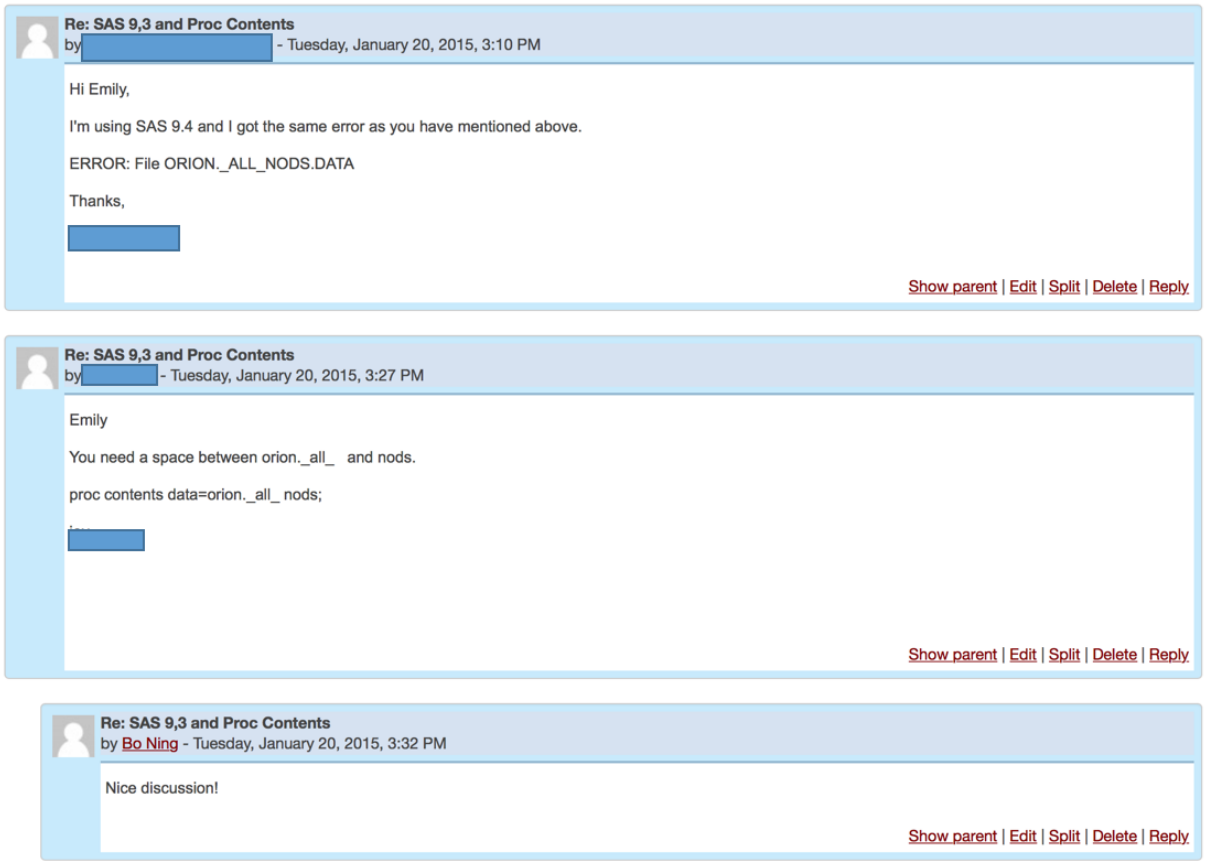
```
%let path=C:\Users\Students\Documents\Spring 2015\ST 555\Data\Data;

libname Orion "C:\Users\Students\Documents\Spring 2015\ST 555\Data\Data";

proc contents data=orion._all_nods;
run;
```

Any and all help will be greatly appreciated!

Have a nice day,

[redacted]

Edit | Delete | Reply



C. Reflection

This is only one discussion on the online students' discussion board, and there are many other great discussions. I choose this one as an example to show how I encourage students learning. In this example, first student asked a question, I did not answer immediately because I was waiting other students to help the student. If one student could answer this question, like in this example, I usually reply "Nice discussion!" after reviewing their comments. I believe doing this could encourage students and also show I was able to answer their questions if they cannot figure out by their own.

This artifact shows students studied in an active learning environment, they are willing to ask questions and active to answer other questions. From those questions, I was able to know students' "muddy points". Also, I could know which student did well and which student needs more

help. I think the online discussion board is a good tool for in-class students as well. In the future, I would like to create a similar board for students asking questions after class.

IV. Evidence of Professional Development in Teaching

A. Synthesis & Application Essay #1

Learning Styles and Reflection in Classroom Teaching Techniques

i. Description and Context

In the summer of 2014, I attended the four-day training in Graduate Student Summer Teaching Institute of the NC State University Graduate School. This training includes workshops and presentations. I found the knowledge I gained in these workshops very useful in my teaching assistant experiences thereafter. The three workshops that I will be focusing on in this essay are as follows:

Workshop Name	Instructor	Date	Time	Location
Learning Styles	Alicain and Jake	Jun, 10, 2014	9:25-10:35am	Room 2037, Carmichael Gym
Student Motivation	Carlos and Katherine	Jun, 10, 2014	10:45-11:45am	Room 2037, Carmichael Gym
Establishing Credibility/Authority/Classroom Mgmt/Boundaries	Alicain and Jake	Jun, 11, 2014	1:00-2:00pm	Playzone, Carmichael Gym

ii. Synthesis

My admission into the Graduate Student Summer Teaching Institute of the NC State University Graduate School presented me with a special opportunity, not only because the training I was to take had been newly developed, but also because of the rigorousness of the training, which I knew would advance my understanding of teaching. This training program motivated me to thereafter join the Certificate of Accomplished Teaching (CoAT) program, which serves to guide teachers to become more skilled and knowledgeable.

From the summer of 2014 to the spring of 2015, I served as a teaching assistant over three semesters for the master`s level class ST 555 SAS Programming I. In the 2014 summer

session, I served as a grader and in-class assistant, helping to solve of-the-moment questions posed by students. In the 2014 fall and 2014 spring sessions, I served as an online TA, grading and answering students' questions. I was able to improve my teaching skills and develop knowledge due to the help under my advisor, Dr. Reneé Moore, as well as via the knowledge I gained from workshops at the Summer Institute.

The most powerful skills I developed in my teaching experience were communication skills. In the following paragraphs, I will discuss how three seminars helped to improve my communication skills. The first seminar dealt with student learning styles. This seminar discussed Felder's learning-style pairs: active and reflective, sensing and intuitive, visual and verbal, and sequential and global. As students' learning styles vary, communicating with students is integral in order to discern what each student's learning style is and to create an effective teaching plan suited to his or her needs. Furthermore, when designing teaching materials, an instructor needs to design materials to meet all leaners' styles. For example, active learners prefer learning by doing, whereas reflective learners prefer learning by thinking. Reflective learners may need a longer amount of time for group discussion than active learners, as they often require more time to think about a discussion topic. An instructor can adjust for this by observing the best time lengths for reflective learners. In addition, sensing leaners wish to connect knowledge to real-world experiences, whereas intuitive learners typically enjoy more abstract methods and theories. Teaching materials should thus be designed to contain equal amounts of theory and practical examples, which can be assisted by continuously asking students if they clearly understand the materials. Visual learners typically prefer to explain themselves via visualizations or some sort, while whereas verbal learners prefer to listen. Thus, when teaching students, instructors may need to explain the materials they are teaching both visually and verbally. Lastly, sequential learners like to go over materials step-by-step, whereas global learners like to understand the whole picture before understanding specifics. Efficient teaching thus involves offering an overall understanding of an issue first, and then delving into specific points sequentially.

From my experience as a student, I found myself to possess both styles in certain of these pairs, and that my learning style can change based on the subject and teaching-style context. I also found this to be a common phenomenon among my classmates. Thus, as a teacher, it may be most efficient to explain to students what one's personal teaching style is, as well as adjust this style according to students learning styles. Overall, students and teachers should develop a mutual understanding between each other to produce positive results. Teaching style adjustments can be made by directly asking students for feedback, by observing them in the classroom, and by examining students' homework.

Aside from better understanding students' learning styles, it is also important to understand their motivations, such as understanding why a student wants to take a particular class. Student motivations were discussed in the second seminar I attended in the Graduate Student Summer Teaching Institute. Taking statistics classes as an example for discussion this regard, I find there to be three distinct kinds of learners: learners who are very good at statistics; learners who dislike statistics, but are required to take a class; learners who motivated primarily by rewards, which then leads to their intrinsic interest in statistics. Using the concepts I learnt in the seminar, the first group students could be labeled deep learners, as they are intrinsically motivated by themselves, whereas the second group of students could be labeled surface learners, as they are motivated simply by the desire to pass the class. The third group of students is known as strategic learners. By figuring out each student`s motivation, a successful teacher should maintain the interest of deep learners while motivating surface learners to become strategic learners. From my point of view, the best way to achieve this goal is through communication, which involves three aspects: First, a teacher should learn each student's background information, including the reasons why they wanted to take a given class, and what they require to learn most effectively in the class. This can be done by distributing a questionnaire on this information during the first class. Second, a teacher should know what aspects of a given subject are disliked or difficult to understand from students' perspective. Motivating students to

ask questions and offer feedback when teaching can help achieve this. Third, if a teacher wishes to give rewards or punishments related to homework or exams, he or she should know whether or not such things will ultimately be effective.

As communication is very important to establish a comfortable teaching and learning environment, improving communication efficiency is a must for teachers. The third seminar I took, which discussed how to establish credibility/authority in the Summer Teaching Institute, offered insights on how to increase one's communication efficiency. According to Myers and Leah's (2004) theory, students expect a teacher to have the following characteristics: to be competent, have character, and be caring. Competent refers to showing confidence with regard to a subject, as well as showing feelings and personality with regard to a subject (not merely acting like a machine of knowledge). By showing competency, a teacher can effectively hold authority and trust with his or her students. Competency does not necessary mean that a teacher must know everything and be able to answer any question, but they must be able to give students the impression of their knowledge. For example, if a teacher cannot answer a given question, it should be expressed as a difficult question. The second characteristic of an effective teacher, character, includes showing enthusiasm, fairness, expectations, and respect. For deep learners, character means showing fair judgment based on how hard students have worked on the subject and their respective improvements. For surface learners, as passing is their primary goal, a teacher should ensure that students who devote their time to studying receive a fair grade. The grade should be flexible to consider students overall performance and background instead of sticking only on exam results. Furthermore, showing character can help surface learners become strategic learners. If such students are treated fairly with respect to their means of understanding materials and varying levels of work ethic, they may become more interested in studying a subject after engaging with it for some time. The final characteristic of an effective teacher, caring, includes showing patience, encouraging questions, being accommodating, and accessibility. Students should feel that their teacher cares about them and sincerely wants to see them improve. Constantly communication

with students is a good way to show caring about them. A teacher need to show eagerness of receiving feedbacks from students including levels of understanding materials, difficulty levels of homework and even fairness of grading policies and grading issues. The teacher could even give responses to feedbacks. Overall, a highly credible teacher will offer trust, fair judgment, and caring to their students, which in turn will make communication easier among all.

iii. Application

There are several tools that I utilized over the three semesters of my teaching. For one, I designed two questionnaires for the online course ST555, which took place from the fall of 2014 to the spring of 2015.

As the online course I took part in was being offered for the first time by the Department of Statistics, there was no prior teaching assistant experience or success stories for me to learn from. I simply began to know the students through communication, as the online course appeared to depend much more on communication than a regular class does. In order to evaluate and improve my communicate efficiency as a teaching assistant, I handed out two questionnaires each semester, one after the first exam (or mid-term), and another before the semester ended. The first questionnaire was designed with open-ended questions that asked students for general feedback with regard to improvements. The second questionnaire contained specific questions that I wanted to ask for the purpose of feedback. The second questionnaire is shown in the following table, which was copied from an evaluation form created by the NCSU Graduate School, NCSU. I added additional questions to the questionnaire.

ST 555 Teaching Assistant Evaluation

Please place a checkmark in the box that best represents your response to each question.

The two questionnaires were designed with the following purposes in mind. The first

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. The TA clearly communicated course objectives					
2. The TA created an atmosphere that facilitated learning					
3. The TA was approachable outside the classroom/laboratory					
4. The TA was familiar with course concepts					
5. The TA was enthusiastic about teaching					
6. The TA actively engaged students (i.e. participation, group work, questions in class, etc.)					
7. Are you going to use the ST555 Learning Kit?					
8. Are you going to take the SAS certificate exam?					
9. Do you recommend “Paul” for the outstanding TA award?					
10. Overall, the TA was effective					
11. What was the TA’s greatest strength?					
12. What changes could the TA make to improve student learning?					

questionnaire was intended for students to write down suggestions and recommendations for

teaching based on their personal learning styles and motivations. Based on this information, I could then adjust my current teaching techniques to fit their needs. After the students submitted their feedback, I wrote responses to them to show my caring and took the advice they gave me as means to improve my communication efficiency. I believe my responses to the students helped to increase their motivation to continue studying the materials of the courses I took part in.

The questions of the second questionnaire are designed to measure students' satisfactory of my job from several aspects: Did I motivate them to study ST555? Have I built my credibility? Does my communication effective? The corresponding question numbers according to each aspect are summarized in the following table.

Categories to check in the questionnaire		**Question number**
Motivation		6, 8
Credibility	Competence	4, 5
	Character	2
	Caring	3, 6, 7, 11
Communication Effective		1, 12

I received a lot of positive feedbacks from the second questionnaire, with the majority of students who offered feedback thinking that my communication was very effective.

Conclusion

As I attended these workshops, I am now able to better understand students' learning styles and motivations, as well as establish credibility as a teacher. I can use the tools I learned in the workshops to improve my communication with students in several regards: to better understand students` learning styles in order to offer the best means of teaching them, to study students' motivations in order to best encourage them in their classes, and to establish credibility so as to make students trust me and be willing to communicate with me. Over the three semesters of

experience as a teaching assistant and two semesters as an online course assistant, I effectively applied the techniques I learned in the workshops I attended within these teachings experiences, which the majority of students recognized in terms of my effective communication.

B. Synthesis & Application Essay #2

Classroom Management and Reflection on Teaching in Statistics Lab

i. Description and Context

In the first essay, I discussed how to create a good study environment from students' perspectives by understanding their learning styles. After I finished the first essay, I had a chance to become a lab teaching assistant and gained in-classroom teaching experience. This experience was in a master's level course in the Department of Statistics. The teaching experience allowed me to apply the classroom management techniques I had learnt from the workshops, and I learnt a lot from this. In this essay, I am going to discuss how to create a good environment from the instructors' side in terms of managing the classroom. My discussion is based on the three workshops I attended (see the table below) nd the experience gained in my teaching practice.

Workshop Name	Instructor	Date	Time	Location
Learning Environment	Katherine and Alicain	Jun, 9, 2014	1:00 -1:45 pm	Room 2037, Carmichael Gym
Technology at NCSU	Stacy and Ashley	Jun, 12, 2014	9:45-11:45am	Room 2037, Carmichael Gym
Classroom Management	Beth Overman	Sep, 25, 2015	2:00-3:00pm	3220 Talley Student Center

ii. Synthesis

Instructors play an essential role in classroom management: they are both the students' friends and their managers. Numerous teaching resources argue that it is essential to create an effective learning environment. In order to do so, it is first necessary to explore what factors most

affect the learning environment. When I attended the workshop, learning environment, the instructors were asked to list some important factors; they mentioned the time of the class, the weather, the physical layout/setting, the topic, and the teacher's requirement of attendance. I will use my teaching experience to explain why some of these factors are important. I taught two labs for the same class with different instructors, one lab in the fall semester and one lab in the following spring semester. The spring semester had a better attendance rate and higher students' participating rate than the fall semester had. This difference may be due to time and weather. The fall lab semester starts at 8:30am from autumn to winter. While the spring lab starts at 10:40am from spring to summer. Both of the labs had higher attendance rates in the first few weeks, the fall semester started to drop when the weather turned cold and students were reluctant to get up. The requirement of attending the lab or not also seemed to affect attendance. The students were required to attend the spring semester lab but the fall semester lab was not compulsory. Furthermore, the materials in the fall semester were well documents so that students feel "safe" if they are not attending the lab. Good preparation of the lab was also a factor. After teaching the fall semester, I was more familiar with the class materials and thus was better prepared for the spring semester. Physical layout did seem to impact attendance as I taught in a small classroom with the same technology setting.

Technology is frequently used in my lab because the lab teaches students how to use statistical programming languages to do statistical analysis. Using technology in my lab has two purposes: educational and student participation. The educational purpose includes two objectives: to teach the requirement materials for the class, such as course materials, homework, or practice exam questions; and to add extra materials as "refreshments" to increase students' curiosity and interests. I taught them how to use programming languages to create a professional-looking report and dynamic documents. To increase students' participation, I used tools introduced from the workshop in NCSU, such as Moodle Forum, clickers, Google form and Google presentation. I tried Google dynamic documents very frequently; I asked students to give course

feedback and complete online quizzes on a system called “Socrative”. Details of how I used Scorative are provided in the next section.

Technology is a part of classroom management. In order to manage the classroom efficiently, it is necessary to create an effective learning environment. Different instructors achieve this in different ways; for example, remembering students’ names, having a sense of humor, being engaging, and being prepared for class. Remembering students’ names is a hard task for some instructors; however, every successful teacher I observed used this technique. I therefore strove to remember my students’ names in the lab in the spring semesters; these students were more willing to ask questions and more likely to participate in the class than the students in my lab in the fall. The second thing is to be prepared for any interruptions, such as technology equipment dysfunction, side conversations, or over-participators. Equipment shut down can cause serious problems and cause students to lose concentration in class. A backup plan in case such a situation arises is recommended. One backup plan I utilized was posing questions that allowed the students to continue working while I asked the technicians for help. Side conversations are problematic if the students speak too much or too loudly. Instructors need to control the balance between allowing short side conversations and preventing long side conversations. One effective way to do so is to ask the students questions, or stop by their side and watch them for a while. After doing this, they will stop talking immediately. Over-participators always ask questions and seem to control the classroom. Instructors need to be aware that these students can have both positive and negative impacts on other classmates. Other students are under less pressure from the instructor because over-participators will always answer the questions; however, over-participators discourage other students who want to contribute as well. One suggestion to address this issue, as Weimer[1] pointed out, is to have a discussion early in the course and ask for students’ opinions. Adjusting teaching techniques for different classrooms also ensures effective classroom

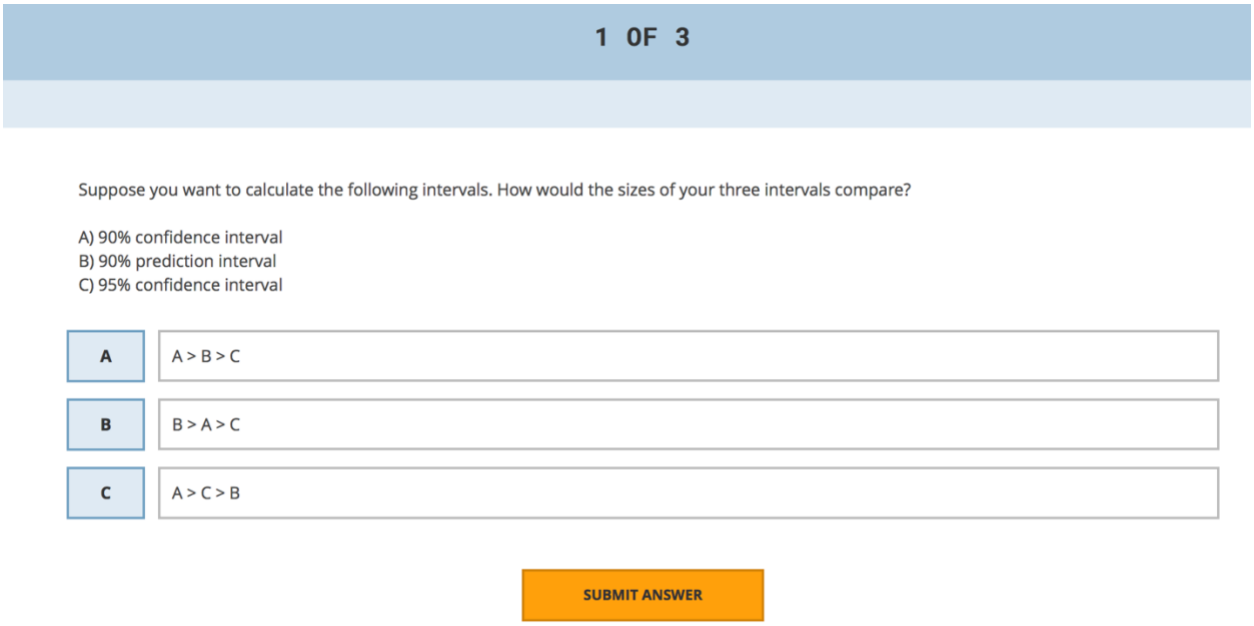
[1] Maryellen Weimer. Special report: 10 effective classroom management techniques every faculty member should know. The Teaching Professor.

management. Classrooms often vary course to course and semester to semester. Instructors should be able to prepare strategies to deal with different situations such as different size classrooms.

In order to create an efficient classroom environment from the instructors' point of view, instructors should know classroom management techniques. Techniques can be adjusted depending on the factors having an impact on the students' learning environment, such as time, weather, attendance requirement, and good preparation of materials. Technologies, also considered as a management technique, have both teaching and increase classroom participation rate purposes.

iii. Application

The first application is about using technology in the lab. When the lab began, I usually spent five minutes introducing new programming tools and reviewing what we had covered in the previous lesson. In order to encourage students to participate in the review session, I used Socrative to create an online quiz. The quiz had multiple choice questions so that students did not need to spend too much time on it; thus it was convenient for time management. Socrative provides a live result option so students could immediately see the votes (i.e. the number of students who chose A). This activity increased students' participation and motivation, and they were more focused on the latter part of the class after doing this quiz. This technique has a positive effect on classroom management. Below is an example of the quiz I created using Scorative, I only attach the first page:



The second application is a description of how I dealt with intervention in my lab. At the beginning of the spring semester, I did not realize the words shown in the programming were so small that students sitting in the back found it difficult to see them. I needed to figure out how to adjust fonts. However, I realized I had forgotten how to do it from the programming language. Since lab time is limited, I chose to use “Cntl+shift++” bottom to make the whole screen larger and thus temporarily resolve the problem and allow the lab to continue.

Conclusion

By attending the three workshops, I learnt several factors affect the learning environment and strategies to improve learning environment and manage the classroom effectively. My two semesters of lab teaching experience highlighted how time and weather, requirement of attendance, and preparation of teaching materials are key factors affecting students’ participation in class. I used technology resources to increase students’ participation, and this proved to be an effective way to manage the classroom. I also noticed that classroom interruptions such as technology shut downs, students’ side conversations, and over-participators will cause problems

that need to be addressed in the class. I provide some suggestions on how to address these problems.

C. Classroom observation #1

Course: ST512 (Experiential statistics for Biological Sciences II) Laboratory

Time: September, 23, 2015 @ 8:30
Observer: Kevin Gross (Associate professor in the Biomathematics Graduate Program)

NC STATE UNIVERSITY
The Graduate School

Certificate of Accomplishment in Teaching Program
Classroom Observation Form – Option 4

Instructor's Name: Bo Ning
Evaluator: Kevin Gross
Observation Date & Time: Sept 23, 8:30
Course: ST512 L

General Evaluation Form – Lab

Evaluator Instructions: During your observation (minimum duration of 45-60 minutes), please address as many of the following teaching behaviors as possible. If a particular behavior is not addressed during your observation time, circle "N/O" (not observed). If the instructor performs above average for any behavior, circle "excellent." Performs well, but is not above average, circle "good." Does not show the appropriate characteristics of a behavior or performs poorly, circle "N/I" (needs improvement). A follow-up meeting with the instructor should be no later than one week from observation date.

Circle One: *First* OR *second* evaluation

Professionalism				
•Starts promptly and is prepared	Excellent	Good	N/I	N/O
•Lab is neat and materials are ready	Excellent	Good	N/I	N/O
•Appears concerned about students' learning	Excellent	Good	N/I	N/O
General Comments: High marks in all regards.				
Teaching Skills & Aptitude				
•Clear introduction (gains attention, interest)	Excellent	Good	N/I	N/O
•Transitions between and within activities/assignments are clear	Excellent	Good	N/I	N/O
•Maintains student interest and involvement	Excellent	Good	N/I	N/O
•Answers student questions professionally and concisely	Excellent	Good	N/I	N/O
•Voice is clear, pleasant and audible. Are there any problems? (Circle all that apply.) None, too soft, too loud, too fast, too slow, mumbles, excessive use of poor grammar, too many filler words ("um," "ah"), sexist/racist comments or questionable humor.	Excellent	Good	N/I	N/O
•Writes clearly	Excellent	Good	N/I	N/O
•Understands background material	Excellent	Good	N/I	N/O

•Is able to flex when there are difficulties (computer technology, instruments, equipment, etc.)	Excellent	Good	N/I	N/O
•Clear Summation (regrouping and summarizing of key points)	Excellent	Good	N/I	N/O
General Comments: Bo did an excellent job weaving together the core concepts of the lab with occasional enrichment material, thus providing a worthwhile learning experience for all students.				

Attitude & Classroom Management				
•Is enthusiastic	Excellent	Good	N/I	N/O
•Adequately enforces safety regulations and lab policies	Excellent	Good	N/I	N/O
•Takes appropriate actions against negative student behavior	Excellent	Good	N/I	N/O
•Treats students fairly	Excellent	Good	N/I	N/O
•Provides positive reinforcement for student effort	Excellent	Good	N/I	N/O
•Movement around the classroom is balanced. Are there any problems? (Circle all that apply.) None, spends too much time with only one group/student, exhibits an odd pattern of circulating around the room when talking, e.g., only circles around one or two tables, paces uncomfortably while talking	Excellent	Good	N/I	N/O
General Comments: Not much opportunity to observe, as students had few questions. I got the sense that students would have been comfortable asking Bo questions if they had any.				

D. Observation #1 reflection

1. What did you feel went well in this class session?

Ans. I feel the class session went well from the following aspects: i) clarified students muddy points about the materials from previous lab; ii) time is under control; iii) I could go over all the

materials I planned to cover; iv) provided a complimentary review for the lecture.

2. What would you like to change about the class session if you had to teach it again?

Ans. The thing I would change is my English presentation skills. If I had a chance to teach again, I could explain definitions more concisely and clearly by re-organize my words.

3. In the light of the observer's comments, what aspects of your teaching approach will you look at changing in the future? How will you do this?

Ans. Currently, the observer thinks I did an excellent job and nothing need to change, except for keeping every lab like this one. However, I understand maybe this is due to observe one class is not enough, I will also looking for feedbacks from students feedbacks.

4. What have you found useful/not so useful about the observation process?

Ans. The observation is very useful; it gives me a big motivation to keep doing excellent job. Also, it gives the observer a brief view of how I running my lab and how to match my lab with his lecture.

E. Classroom observation #2

NC STATE UNIVERSITY
The Graduate School

Certificate of Accomplishment in Teaching Program
Classroom Observation Form – Option 4

Instructor's Name: Bo (Paul) Ning
Evaluator: Jonathan W. Duggins
Observation Date & Time: 2016-03-16 @ 10:40
Course: ST 512-002B (Experiential statistics for Biological Sciences II) Laboratory

General Evaluation Form – Lab

Evaluator Instructions: During your observation (minimum duration of 45-60 minutes), please address as many of the following teaching behaviors as possible. If a particular behavior is not addressed during your observation time, circle "N/O" (not observed). If the instructor performs above average for any behavior, circle "excellent." Performs well, but is not above average, circle "good." Does not show the appropriate characteristics of a behavior or performs poorly, circle "N/I" (needs improvement). A follow-up meeting with the instructor should be no later than one week from observation date.

Circle One: *First* OR *second* evaluation

Professionalism				
•Starts promptly and is prepared	Excellent	Good	N/I	N/O
•Lab is neat and materials are ready	Excellent	Good	N/I	N/O
•Appears concerned about students' learning	Excellent	Good	N/I	N/O
General Comments: Appropriate dress and friendly demeanor. Most lab content was provided, but Bo augmented with appropriate information indicating his level of preparedness and dedication to the day's lecture.				
Teaching Skills & Aptitude				
•Clear introduction (gains attention, interest)	Excellent	Good	N/I	N/O
•Transitions between and within activities/assignments are clear	Excellent	Good	N/I	N/O
•Maintains student interest and involvement	Excellent	Good	N/I	N/O
•Answers student questions professionally and concisely	Excellent	Good	N/I	N/O
•Voice is clear, pleasant and audible. Are there any problems? (Circle all that apply.) None, too soft, too loud, too fast, too slow, mumbles, excessive use of poor grammar, too many filler words ("um," "ah"), sexist/racist comments or questionable humor.	Excellent	Good	N/I	N/O
•Writes clearly	Excellent	Good	N/I	N/O
•Understands background material	Excellent	Good	N/I	N/O

•Is able to flex when there are difficulties (computer technology, instruments, equipment, etc.)	Excellent Good N/I N/O
•Clear Summation (regrouping and summarizing of key points)	Excellent Good N/I N/O
General Comments: Often spoke too quickly and softly to be heard and understood in the back (third) row. However, despite this he did maintain the attention of the majority of students when required.	

Attitude & Classroom Management	
•Is enthusiastic	Excellent Good N/I N/O
•Adequately enforces safety regulations and lab policies	Excellent Good N/I N/O
•Takes appropriate actions against negative student behavior	Excellent Good N/I N/O
•Treats students fairly	Excellent Good N/I N/O
•Provides positive reinforcement for student effort	Excellent Good N/I N/O
•Movement around the classroom is balanced. Are there any problems? (Circle all that apply.) None, spends too much time with only one group/student, exhibits an odd pattern of circulating around the room when talking, e.g., only circles around one or two tables, paces uncomfortably while talking	Excellent Good N/I N/O
General Comments: This was a computing lab – as such there aren't any safety/policy issues to be observed. His interactions with the students were overwhelmingly positive.	

F. Observation #2 reflection

1. What did you feel went well in this class session?

Ans. Students were very active and asked a lot of interesting questions. Good time control.

2. What would you like to change about this class session if you had to teach it again?

Ans. I would like to add a summary part at end of the lab. Due to a lot of students asked questions, I almost out of time at the end of the class. I might need to control time more efficiently.

3. In the light of the observer's comments, what aspects of your teaching approach will you look at changing in the future? How will you do this?

Ans. Speaking too quick and softly would be an issue and need to be change in the future. I will try to slow down and speak loudly in the future lab.

4. What have you found useful/not so useful about the observation process?

Ans. I think the observer could catch my weakness that I have not realized before. It is also good to let instructor know my teaching style so that he/she could consider to give lab material based on my teaching style.

V. Reflective Summary

I appreciate the Graduate School of North Carolina State University provides me such a great opportunity to help develop my teaching skills. The four days training in 2014 Graduate Student Summer Teaching Institute I attended provides a concrete training on my teaching. During the training, I had six seminars, with each seminar had been perfectly designed by instructors. The instructors are so good at teaching that provided me good examples of what is an excellent teacher looks like. Their devotedness of the training motivates me to apply for the Certificate of Accomplishment in Teaching (CoAT) program. During two years training in CoAT program, I attended extra two seminars in graduate school. The eight seminars in total provides me extremely useful guides when I was teaching lab and assisting online courses.

When I attended the first seminar: understanding students learning styles, it made me to re-think about my past knowledge of teaching. Based on my past experience, few of my teachers considered all students are the same and only used one teaching style to teach every student. Sometimes, it made me to feel I was a really a bad leaner and I was never going to be successful in my life. After took this seminar, I realized it is a common phenomenon that students have their own learning styles. In order to understand student learning style when I was a TA in the past 5 semesters, I created questionnaires and distributed them in each class. I made myself very easy to be reached for students because I don't want my students feel the way I felt myself in the past. I believe a good teacher is able to not let any students fall behind. The rest seminars also provide valuable tool for me to teach, such as classroom management, effective learning and technologies in NCSU. They help me to be able to handle emergency issues and make students focus with different classroom environments.

I am very fortunate to work with my great mentor, Dr. Reneé Moore, for three semesters. When she was my advisor in teaching, she provided me numerous teaching opportunities, such as creating “ST 555 Programming Learning Kit”, designing course materials and final exams. She recommended me to a reward of Outstanding Teaching Assistant in 2015 which makes me feel more confidence on my teaching. I am also thanks to my department to give me 15 contact hours teaching opportunity on leading online discussion and 30 contract hours on teaching statistics lab.

I want to find a job in academic after graduation, and I need to be prepared to be an independent instructor in the future. Thus those teaching experiences are valuable to me. Although I understand to teach a class is quite different from working as a TA, I think my two teaching philosophies (develop clear course plans and teaching tools with achievable outcomes for each course; and encourage continuous, open communication with the teaching team members and students) are still applicable. I will use them to build mutual trust between me and students, and to create a course plan fits for students need and thus make students have an effective learning environment.

References

Felder, R. M., & Brent, R. (2013). Understanding student differences. *Journal for Engineering Education*, 57-72.

Felder, R. M., & Silverman, L. (1988). Learning and teaching styles in engineering education. *Journal of Engineering Education*, 674-681.

Vajoczki, S., Watt, S., Marquis, N., Liao, R., & Vine, M. (2011). Students approach to learning and their use of lecture capture. *Journal of Educational Multimedia and Hypermedia*, 195-214.