

# Mario Davidson, PhD, MAS, MS, MA

## Educator’s Portfolio

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### Contents

- Teaching Philosophy: Real Entertainment and Authentic Engagement for Group Learning ..... 2
  - Inspiration for Teaching ..... 2
  - Engaging Learners with Entertainment ..... 2
  - Use Real World (Authentic) Situations ..... 2
  - Group Work ..... 3
  - Variety of Feedback ..... 3
- Institutional Activities ..... 4
  - Courses..... 4
  - Lectures..... 6
  - National Activities ..... 8
- Teaching Effectiveness..... 9
  - Quantitative Data:..... 9
  - Qualitative Data ..... 11
- Teaching Awards..... 13
- Mentoring ..... 13
- Curriculum Design..... 13
- Letters of Recommendation ..... 15
- Example Lesson Plan ..... 17
  - Goal*..... 17
  - Objectives*..... 17
  - Background ..... 17
  - Instructions*..... 17
    - Meeting with the Investigator ..... 17
    - Project Role ..... 17
    - Deliverables..... 17
    - Assessment ..... 18

# Teaching Philosophy: Real Entertainment and Authentic Engagement for Group Learning

## Inspiration for Teaching

It may surprise you that much of my inspiration around effective teaching stems from my first experience in a college statistics course. We learned about calculating the expected value, variance, and standard deviation based on the distribution of the data. It was great! For the first time in my college career, I was learning in a mathematics course where the purpose was as “clear as day”. My professor demonstrated passion for the topic, care, purpose, and stressed the importance of hard work and independent thinking.

While he was excellent, in hindsight, I realize that a few extra pedagogical techniques would have been of benefit had he used them. These include being more entertaining, teaching with real world situations, and providing an opportunity for group work and a variety of feedback. Many believe statistics is difficult and boring, but I use this instructor as my fundamental role model. Through his example, I now make sure to include multi-modal instructional techniques.

## Engaging Learners with Entertainment

Keeping learners engaged can be challenging, thus I try to entertain them in a variety of ways: using jokes, telling stories, making analogies, acting, and using ice-breakers. For example, when teaching hypothesis testing whereby the class tries to determine if there is reasonable evidence of a researcher’s claim, I begin with a story of how my girlfriend wanted me to prove that our “love was destiny” before accepting my wedding proposal. I act this scene out with great enthusiasm, describing my claim of true love using probability all the while making an abstract concept entertaining and obtainable. These techniques have apparently been quite memorable. Many years later when I encounter my former students, some have laughed and reminded me of how I proposed to my now wife.

## Use Real World (Authentic) Situations

While entertaining learners can make class “fun,” it is not enough to ensure learning and sometimes runs the risk of being superficial. Using real world situations can improve a student’s understanding in context. Unfortunately, during my earlier experiences as a medical student instructor I failed to utilize this powerful approach. It was not until I attended a workshop on project-based learning that I began to evolve and try new techniques. The workshop used a “flipped classroom” approach whereby the learners viewed modules before class and focused on applying their knowledge using statistical software to create a research project/presentation in class based on a local company’s data or the learner’s own gathered data.

This workshop was an epiphany! I immediately applied the methods and although, my initial run did not return the stellar evaluations I desired, an upward trend encouraged me to continue. During the next few offerings, my evaluations showed an overwhelming improvement. Students voluntarily and

enthusiastically stayed after class, had questions, sought new information from the data, looked for ways to display the data, and requested more advanced lessons. While this was music to my ears, it also reinforced the notion that my efforts as an educator must continue to be a work-in-progress.

After seeing how well this approach was received, I revised the curriculum for my graduate statistical collaboration course, a course in which students learn to communicate with non-statisticians about statistics. I incorporated multiple real world projects where learners work on a team, serve in a defined role such as a leader or an analyst, meet with clients, analyze data, and report results through oral presentations. Overall, learners have positively commented on the knowledge, experience, and utility of the projects. My growth as an educator has offered me the courage to experiment with curricular change for the benefit of my learners.

Along with the projects in my collaboration course, I use cases and role playing to help the learners think about the real world, ethical issues, professionalism, and responses to situations. Two examples: 1) We discuss a video of a young, attractive woman allegedly fired for dressing provocatively, while teaching about proper workplace attire, and 2) I act like an investigator disinterested in granting authorship to a statistician allowing my students the opportunity to practice critical conversations while remaining professional. These activities generate a lot of discussion and thought.

### Group Work

In all of my classes, I use a mixture of small and large group activities. I find that group work helps keep learners engaged, accountable, communicative, and contemplative. In my graduate course, I typically see growth in their communication, cohesiveness, and leadership. They learn valuable lessons in scheduling, setting clear goals and expectations, meeting deadlines, producing quality work, accepting and providing critiques, and understanding the complexity of working with other statisticians. Additionally, students in my biostatistics course learn about giving and receiving feedback.

### Variety of Feedback

Because learners focus on the objectives in which they are assessed, providing feedback in multiple ways is instrumental. In my courses, I have made it a best practice to use the power of peer assessment. I frequently ask my learners to assess one another. For my introductory biostatistics course, learners answer ungraded questions within the modules, which provide the rationale behind their choices. They also take regular quizzes and I discuss problem areas.

For their projects in the collaboration course, learners also receive on-the-spot feedback from clients, my teacher's assistant, and me regarding their communication, how they assist the client through their professionalism, body language, effectiveness, and efficiency. Learners receive formative feedback from oral and written peer and instructor feedback on numerous assignments and presentations.

In closing, my ever expanding philosophy is that educators should employ a host of pedagogical techniques. No one technique fits all learners, but I feel that effective teaching requires that the instructor emphasizes the purpose of the lesson, keeps the learners engaged, and encourages independent thinking. He or she should demonstrate the topics in a real-world context using projects,

cases, and role playing. Finally, learning is enhanced by allowing students to work in groups and receive a variety of assessment.

## Institutional Activities

### Courses

Target Learners	Years	Quantity	Number of Learners	Topics	Format / Description
Columbus State Community College Undergraduates	2006 - 2007	2 quarters 3 hours/week	20	Probability, Graphs, Confidence Intervals, Hypothesis Testing, Correlation	<u>Introduction to Statistics</u> Lecture Small Groups Lab Final Project
VMS II	2010 - 2012	3 blocks 16 hours/year	100	Probability, Graphs, Confidence Intervals, Hypothesis Testing, Correlation, Research Methods	<u>Introduction to Research with an Emphasis on Biostatistics</u> Lecture Small Group Project Proposal Literature Reviews Critiquing the Literature
South University Non-traditional	2010	Online	25	Probability, Graphs, Confidence Intervals, Hypothesis Testing, Correlation	<u>Introduction to Statistics</u> Online Discussions Online Feedback
VU MHPE	2012	1 quarter 8 hours/week	9	Probability, Graphs, Confidence Intervals, Hypothesis Testing, Correlation, SPSS, Research Methods, Qualitative Data Analysis, Report Writing, Theory, Qualitative Software	<u>Qualitative and Quantitative Analytic Methods</u> Lecture Small Group Project Proposal Literature Reviews Critiquing the Literature Lab
VUSM, Biostatistics, Graduates	2012 - Present	3 semesters 2-3 hours/week	5-10	Challenges in Consulting, Professionalism, Non-Verbal Communication, Presentation Skills, Conducting a Consultation, Analysis	<u>Statistical Collaboration in Health Sciences I</u> Flipped Classroom Lecture Small/Large Groups Role Playing Critiquing

				Plan	Student Presentations Mock Consultations
VUSM, Biostatistics, Graduates	2013 - 2014	2 semesters 2-hours/bi- week	5-10	Professionalism, Non- Verbal Communication, Presentation Skills, Conducting a Consultation, Creating an Analysis Plan, Report Writing, Questionnaire Design, Poster Presentation	<u>Statistical Collaboration in Health Sciences I</u> Lecture Small/Large Groups Critiquing Consultations Student Presentations Special Topic Speakers Group Projects
VMS II	2013	2 month block 2 hours/week	12	Probability, Graphs, Confidence Intervals, Hypothesis Testing, Correlation, Research Methods, Poster Presentation	<u>Project Based Biostatistics</u> Flipped Classroom Online Modules Small Group Research Project Literature Reviews
MeHarry Medical College, MD/Epidemiology Year 1	2013	1 month block 16 hours/week	2	Probability, Graphs, Confidence Intervals, Hypothesis Testing, Correlation, Research Methods, Poster Presentation, Questionnaire Design	<u>Project Based Biostatistics</u> Flipped Classroom Small Group Online Modules Research Project Literature Reviews
MeHarry Medical College, MD/Epidemiology Year 1	2014	1 month block 16 hours/week	2	Probability, Graphs, Confidence Intervals, Hypothesis Testing, Correlation, Research Methods, Poster Presentation, Questionnaire Design	<u>Project Based Biostatistics</u> Flipped Classroom Small Group Online Modules Research Project Literature Reviews
VMS II	2014	2 month block 6 hours/week	8-10	Neuro-psychiatric Disorders and Their Pathophysiological Substrates	<u>Brain and Behavior</u> Small Group Facilitator
VMS II	2014	3 month block 2 hours/week	20	Research Methods, Study Design, Measurements, Biostatistics, Interpreting Results, Scientific	<u>Research II</u> Small Group Facilitator

				Communication	
VMS II	2015	3 month block 2 hours/week	20	Research Methods, Study Design, Measurements, Biostatistics, Interpreting Results, Scientific Communication	<u>Research II</u> Small Group Facilitator
VMS II	2015	2 month block 6 hours/week			<u>Endocrine, Gastrointestinal Nutrition and Reproduction</u> Small Group Facilitator

### Lectures

Target Learners	Years	Quantity	Number of Learners	Topics	Format / Description
VMS II	2008	3 hours	100	Types of Data Confidence Intervals Hypothesis Testing Power	<u>Patient Profession, and Society II</u> Lecture
VUSM Medical Personnel	2008	1 hour	10-20	Hypothesis Testing	<u>What is Hypothesis Testing?</u> Lecture Small Group
TSU Mathematics Undergraduates	2008	1 hour	10-15	Career Path to Becoming a Statistician	<u>Journey to Becoming a Statistician</u> Interactive Lecture
VMS Global Health	2008	1 hour	10-15	Types of Data Confidence Intervals Hypothesis Testing Power	<u>Introductory Biostatistical Topics</u> Lecture
VUSM Medical Education Researchers	2008	1 hour	5-15	Statistical Tests	<u>Choosing the Correct Statistical Test</u> Interactive Lecture
VMS II, VUSM General, VUSM Biostatistics Graduates, VU Medical Researchers,	2008 – Present	1 – 2 hours 4-6 times/year	15 - 40	Designing a Quantitative and Qualitative Study	<u>Where to Start When Designing a Research Project</u> Lecture Small Group

Summer Interns					
VMS I	2009	3 hours	100	Types of Data Confidence Intervals Hypothesis Testing Power	<u>Patient Profession, and Society I</u> Lecture
VUSM Medical Personnel , VMS I	2009 - 2011	1-2 hours/year	20 – 100	Search Strategy Research Question Quality Search	<u>Conducting a Literature Review</u> Interactive Lecture Small Group
VMS Biostatistics Professionals	2009	1 hour	35-50	Consulting Psychology Consulting Experiences	<u>Challenges of Consulting: Experiences of Real Biostatisticians</u> Interactive Lecture Case Studies
VMS Global Health, VU Psychology Professionals	2009 2014	1 hour/year	15-25	Types of Questions Reliability Validity	<u>Designing a Questionnaire</u> Interactive Lecture Small Groups
VUSM Medical Professional	2009- Present	4 hours/year	5-15	Educational Theory Types of Data Confidence Intervals Hypothesis Testing Research Design	<u>Introduction to Research in Medical Education</u> Workshop Small Group Interactive Lecture Facilitating
VU Undergraduate Education, VUSM Medical Personnel	2010- Present	1 hour	20-30	Hypothesis Testing	<u>Hypothesis Testing: Understanding P-Values</u> Lecture Small groups
VMS II, General, Biostatistics Graduates, Medical Researchers Summer Interns	2011 – Present	1 – 2 hours 4-6 times/year	10 - 30	Designing, Assessing, Presenting a Poster	<u>Creating an Effective, Visually Attractive Scientific Poster: Making People Stop!</u> Workshop Lecture Small Groups
VMS Medical Education Researchers	2011	1 hour	3-5	Paradigms of Quantitative, Qualitative, and Mixed Methodology	<u>A Comparison of Research Methodologies</u> Lecture

VMS Medical Personnel	2011	1 hour	10-25	Types of Graphs Interpreting Graphs	<u>Basics and Beyond: Displaying Your Data</u>
Cumberland University Nursing Graduates, VUSM Pediatric Fellows	2011-2012	4 hours/year	10-40	Research Design, Measurements, Confidence Intervals, Statistical Tests	<u>Introduction to Biostatistics</u> Workshop Lecture Small Groups
VUSM Pulmonary Fellows	2013	2 hour	5-10	Measurement, Statistical Tests	<u>Introduction of Modeling</u> Lecture Small Groups Lab
VU MPH Graduates	2014	4 hours	20-25	Data Dictionary Data Collection REDCap	<u>Social and Behavioral Science for Public Health</u> Lecture
VUSM Medical Personnel	2014	1	25	Data Management Graphs Statistical Tests	<u>Introduction to R Commander</u> Mini-lecture Facilitating Lab

### National Activities

Meeting	Location	Date	Topic	Format	Meeting Description
Generalist	San Antonio	2008	The Basics of Research in Medical Education	Workshop	Medical Education Conference
Southern Group on Educational Affairs Medical Education Researchers	Houston	2011	Moral Distress and Changes in Burnout	Presentation	Medical Education Conference
AAMC Southern/Northeast Regional Meeting	Nashville	2011	Medical Student Mental Illness – Understanding the	Presentation	Medical Education Meeting

			Problem and Finding Solutions		
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## Teaching Effectiveness

### Quantitative Data:

The Basics of Research in Medical Education – Fall 2008; Mean Scores

Range: Likert 1-5 with 5 being most positive

Overall – 4.75

Content – 4.5

Five objectives met – 4.2

Statistical Collaboration in Health Science (BIO 351) – Fall 2012; Median Scores

Range: 0-100

Overall – 84

Course organized – 91

Activities integrated – 91

Instructor communication – 92

Instructor prepared – 100

Encourage independence - 94

Effective engagement – 100

Instructor helpful – 100

Instructor knowledgeable – 98

Overall effectiveness – 97

Project Based Biostatistics – Spring 2013; Percentage

Range: Likert 1-5 with 5 being most positive

Course organized – 4 (60%)

Encourage independence – 4&5 (80%)

Encourage class participation – 4&5 (100%)

Research proposal valuable – 4&5 (70%)

Poster experience valuable – 4&5 (70%)

Prepared for research – 4&5 (80%)

Project Based Statistics at MeHarry – Summer 2013; Percentage

**N = 2**

Range: Likert 1-5 with 5 being most positive

Course organized – 4 (100%)

Encourage independence – 5 (100%)

Encourage class participation – 5 (100%)

Research proposal valuable – 4&5 (100%)  
Poster experience valuable – 5 (100%)  
Prepared for research – 4&5 (100%)

An Introduction to Questionnaire Design – Fall 2013; Percentage  
Range: Likert 1-4 with 4 being most positive  
Satisfaction with presentation – 3&4 (87%)  
Satisfied with training – 3&4 (87%)  
Increase in knowledge, skills, attitude – 3&4 (93%)

Statistical Collaboration in Health Science (BIO 352) – Fall 2013; Median Scores  
Range: 0-100  
Overall – 75  
Course organized – 81  
Activities integrated – 84  
Instructor communication – 93  
Instructor prepared – 95  
Encourage independence - 76  
Effective engagement – 100  
Instructor helpful – 99  
Instructor knowledgeable – 75  
Overall effectiveness – 100

Statistical Collaboration in Health Science (BIO 351) – Fall 2013; Median Scores  
Range: 0-100  
Overall – 85  
Course organized – 86  
Activities integrated – 96  
Instructor communication – 90  
Instructor prepared – 94  
Encourage independence – 83  
Effective engagement – 100  
Instructor helpful – 83  
Instructor knowledgeable – 100  
Overall effectiveness – 90

Statistical Collaboration in Health Science (BIO 352) – Spring 2014; Median Scores  
Range: 0-100  
Overall – 83  
Course organized – 85  
Activities integrated – 90  
Instructor communication – 98  
Instructor prepared – 98  
Encourage independence – 86  
Effective engagement – 96  
Instructor helpful – 93

Instructor knowledgeable – 98

Overall effectiveness – 96

EDP Poster Design – Fall 2014; Mean Score

Range: Likert 1-5 with 5 being most positive

Overall – 4.7

Content – 4.6

Four Objectives Met – 4.4

## Qualitative Data

*Statistical Collaboration in Health Science (BIO 351 & 352)*

“Dr. Davidson made it clear that he really cared about what we thought of the course, and he solicited our feedback about the course on more than one occasion. He was enthusiastic about the material --- the material is important to him, and it shows.”

“People who don't usually speak up in our other classes spoke in this one, and I enjoyed hearing their opinions.”

“Dr. Davidson has clearly spent a great deal of time and attention into constructing this class and establishing a game plan for teaching it. This is undoubtedly a difficult class to teach - most students arrive with negative preconceptions - but his enthusiasm for teaching in general and the course material in particular made the class always bearable and often enjoyable.”

“I read this(presentation) and these (suggestions) are very good and REAL in addressing REAL problems and proactive solutions. Not everyone in our department practices these methods, but I think it would be very useful if you sent these to all faculty as well. From my standpoint this should be required reading for everyone. That way, maybe we can deter department members from "playing games" to get ahead, especially when the reality is that everyone is going to face difficulties and we should be working as a team in the first place. Thank you so much for giving us biostatisticians a voice!”

“Your talk and presentation were quite informative and well done. Lively discussion is never boring and it was nice to hear everyone engaged in the subject matter. You have improved my understanding of the relationships each of you have with our collaborators as well as our (Biostatistics') positions in the research world as real contributors - and not technicians...it's complicated!”

*Biostatistics at Vanderbilt*

“I got a lot out of the course. I have had very little biostats background, and so I found this course to have the appropriate depth of knowledge that I needed to understand scientific literature. Just today I was in microbio small groups and we were reading an article published in the New England Journal of Medicine. The confidence interval was between a negative and positive number, and they even state that they did not have enough power! Everyone in my group agreed that this was not a good paper. To be honest, if I did not take your course, I would've deemed this paper as meaningful just because it was in a prestigious journal. Now, I really feel like I am better equipped to be more critical now!”

“The course taught me a lot about statistics in a relatively short amount of time. Dr. Davidson was very involved in our projects and demonstrated an excellent commitment to our learning.”

“I appreciated the opportunity to present and receive feedback. I think the project-based aspect of the course is valuable.”

“It was very valuable to create a poster and give a presentation. This is an essential skill and I am glad that I got to practice it now.”

#### *Poster Presentation*

“Thanks so much for sending your presentation. We will post it on the CRC website (<http://www.mc.vanderbilt.edu/gcrc/workshop.html>). Your presentation is an excellent resource for our investigators.”

“Thank you so much for once again sharing your workshop on Poster Presentations. You outdid yourself in presenting it with humor and staying in touch with your audience. The workshop format ensured that it was impossible to leave the session without an authentic experience in developing or honing skills in poster design and content. The topics for poster design were insightful. Two students have already told me how much they enjoyed it and surprisingly good the final products actually were.”

“It was all done so well - Mario covered the most important points.”

#### *The Basics of Research in Medical Education*

“I am writing because two of my colleagues in General Medicine attended what they described as a wonderful presentation on educational research given by you (Dr. Dewey) and Drs. Turner and Davidson at the recent AAMC meeting. One of their comments was ‘I wish it could have been longer!’”

“This is an area that is relevant to many of our clinician-educator faculty. We have a growing number of junior faculty who are heavily involved in our Departmental educational efforts, and would benefit greatly from improving their skills in this area. I was wondering if you, and potentially your co-presenters Drs. Turner and Davidson, might consider some sort of visiting professorship in which we could spend more time with you on this topic.”

#### *Stand-Alone Lectures for CORE and GCRC*

“Dr. Davidson is always professional. His presentations are adjusted for the level of the audience – a great talent for teaching. His advice is constructive, focused, practical and understood. I have invited him on several occasions to present...where faculty, residents and students can get feedback on ideas for research in education, projects in progress and ways of interpreting and presenting results. He has done an excellent job every time he presented.”

“The message you sent is simple and concrete. You are really a great teacher. Your talk makes me rethink “WHY we always put the hypothesis of interest in H1 but not H0”. I always enjoy your talk.”

“I just thought I’d drop you a note and say that the R course you taught today was really great. I have experience using SAS, but that program is expensive and a pain to download each year, so I was excited to learn about this program instead. “

“I truly hope that you will be able to teach more of these courses (R Commander) to expand upon these concepts taught earlier. Thanks again!”

## Teaching Awards

Spring quarter distinguished statistics teacher’s associates at The Ohio State University, 2002

Outstanding Educator Development Program Workshop Facilitator, 2010

## Mentoring

Marissa Blanco (medical student) at Vanderbilt University School of Medicine – Using a keypress task to study restricted interests in children with autism, 2010

Olufemi Kassim (medical student) at Vanderbilt University School of Medicine – Risk factors of substance abuse in medical students, 2011

## Curriculum Design

Curriculum	Date	Role	Description
Introduction to Research with an Emphasis on Biostatistics	2010-2012	Course Director	Created and implemented
Qualitative and Quantitative Analytic Methods	2012	Course Director	Co-created and implemented
Statistical Collaboration in Health Sciences I	2012	Course Director	Created and implemented
Statistical Collaboration in Health Sciences II	2013	Course Director	Created and implemented
Project Based Biostatistics	2013	Course Director	Created and implemented

Research I	2013	Advisor	Assisted the committee with designing the curriculum with research, educational, and biostatistical topics
Research II	2013	Advisor and Small Group Facilitator	Assisted the committee with designing the curriculum with research, educational, biostatistical, and logistical topics
Statistical Collaboration in Health Sciences I	2013	Course Director	Created and implemented
Statistical Collaboration in Health Sciences II	2014	Course Director	Created and implemented
Research I	2014	Advisor	Assisted the committee with designing the curriculum with research, educational, and biostatistical topics
Curriculum 2.0	2014-Present	Standing Assessment Committee, Milestone Assessment, Curriculum and Evaluation Team, and Master Adaptive Learner Committee	Active participation and comprehensive curricular revision
Research II	2014	Advisor and Small Group Facilitator	Assisted the committee with designing the curriculum with research, educational, biostatistical, and logistical topics. Small group facilitator
Research II	2015	Advisor and Small Group Facilitator	Assisted the committee with designing the curriculum with research, educational, biostatistical, and logistical topics. Small group facilitator

## Letters of Recommendation

January 21, 2015

To Whom It May Concern-

It is my great pleasure to provide this letter of support for Dr. Mario Davidson and his application to the VUSM Academy of Excellence in Teaching.

Last year, I was enrolled in a two-semester *Statistical Collaborations in Health Sciences* sequence taught by Dr. Davidson. This course, required of all biostatistics graduate students, was intended to prepare us for the transition from solving classroom problem sets to contributing statistical expertise in our future collaborative work. Throughout the year, Dr. Davidson was very effective at accomplishing this objective. His preparation prior to each class was clearly extensive, his lectures were interactive and engaging, and he was fantastic with providing detailed, insightful feedback in a timely fashion regarding all of my collaborative work. The shadowing and collaborating opportunities – the crux of the class – were always real, relevant, educational, and well-coordinated for each student in the class; a logistical task that I personally found impressive.

In my opinion, Dr. Davidson's greatest attribute as an educator is his dedication to the learning process. He was always receptive to feedback for improving the class and made himself available outside of class. Even after the class has finished, I still seek him for guidance. He clearly has a passion for teaching and a genuine concern about his students' educational growth. Simply, he is an excellent teacher. For these reasons, I enthusiastically recommend Dr. Davidson without reservation.

Mark J. Giganti, M.S.

3<sup>rd</sup> year PhD student

Department of Biostatistics

January 20, 2015

Dear Dr. Mario Davidson,

I am happy to write you a letter in support of your application to the VUSM Academy of Excellence in Teaching.

I want to start by expressing how much I appreciate your teaching style. Through my graduate and undergraduate career I have witnessed many styles of teaching, some resonating with me more than others. Some professors, especially in my graduate school experience, have expert subject knowledge and the best intentions, but they were not very effective educators. You did more than just refer the class to information. It was clear to me you put a lot of thought and effort into how you presented the material. You incorporated activities in class that fortified my memories of the content and broke up lectures into segments manageable for my attention span. I will never forget some of the scenarios we rehearsed for meetings with collaborators.

In addition to your teaching prowess, you were always amiable and approachable as my teacher and academic advisor. Your criticism of assignments was constructive and thoughtful, not rushed through. In turn, you were always eager and open to receiving feedback about the class through face-to-face discussion and anonymous surveys. The practical adjustments to the projects with collaborators serve as evidence of your respect for our opinions.

In conclusion, I fully support your application to the VUSM Academy of Excellence in Teaching. I believe you would make valuable contributions to the missions of the academy and medical education at Vanderbilt.

Sincerely,

Austin Lanser

3<sup>rd</sup> year MS student

Department of Biostatistics

## Example Lesson Plan

### *Statistical Collaboration BIO 351 Investigator Project Instructions*

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#### **Goal**

*To gain a practical understanding and experience of the complexities of working on a team of biostatisticians in order to complete research projects.*

#### **Objectives**

At the conclusion of these projects, participants will be able to:

- communicate effectively regarding research and statistics.
- work collaboratively on a team fulfilling a variety of statistical roles.
- understand and demonstrate the roles of biostatisticians on a research team.
- coordinate the moving parts of a research project.

#### **Background**

This semester, four investigators will visit our class. They will present one of their research questions within the context of preparing for a grant, improving the quality of the study or manuscript publication. Your goal will be to assist them as a team of biostatisticians with thought provoking questions, ideas, and recommendations.

#### **Instructions**

*You will be required to complete three of the four statistical collaboration projects. Projects will consist of a meeting with the investigator, project roles, deliverables, and a project summary meeting.*

##### **Meeting with the Investigator**

During the investigator meeting, you will have approximately 45 minutes – until a quarter before the hour – in class to gather enough information to provide advice and complete your project. Due to the time constraints, it will be important that you **manage your time well**.

##### **Project Role**

There are three roles – the leader/statistical analysis plan (SAP) writer, analyst, and scribe/final report writer – students will be assigned to roles with a systematic randomization scheme. Each person will have an opportunity to perform each role once this semester.

##### **Deliverables**

A complete project will consist of the following deliverables:

1. Meeting minutes

2. Data set and associated .nw or .Rnw file
3. Data dictionary (See Guidelines for Data Collection, Data Dictionary and Data Entry.v4.pdf)
4. Statistical analysis plan (SAP)
5. Analysis .nw or .Rnw file
6. Final report
7. Peer evaluations (See Individual Performance: Peer Evaluation section below)
8. Project summary meeting

Create your project based on the ideal situation (e.g. If the client has a consultation during the design phase, the created data set will be based on the expected final data set.).

### ***Project Summary Meeting***

At the end of the project, the leader will be responsible for arranging a private one hour meeting with the instructor to: 1) Summarize the project, 2) Discuss successes and failures of the project, 3) Discuss the group's functioning, and 4) Reflect on lessons learned. [Leaders are encouraged to schedule a meeting approximately a week after the project deadline.](#)

### ***Assessment***

Grades will be assigned based on group and individual performance. Excluding the leader, 70% will be based on the group performance and 30% will be based on the scores from the peer evaluations (See the Individual Performance: Peer Evaluations section below and Collaboration.Roles.Peer.Assessment.xlsx). The leader of the project will have a 60/40 weighting respectively.

### ***Group Performance***

Projects will be assessed by the instructor based on rubrics for each role (See Project.Rubrics.xlsx).

### ***Individual Performance: Peer Evaluations***

For each project, students will be required to complete four evaluations of their peers (See Collaboration.Roles.Peer.Assessment.v3.xlsx.). If a criterion has not been observed, mark "NA." [Type the name of the person that is being evaluated. Do not type your name.](#) Evaluations are anonymous; however, will be shared with the evaluated individual. Please recognize with the small groups, anonymity may prove to be difficult, thus students are **STRONGLY** encouraged to be professional, honest, and constructive in their evaluations. Constructive feedback is considered part of your professionalism. A tabulation of the median score criterions will be recorded as the individual performance.

As a peer reviewer, it is important to provide constructive feedback as it helps others develop. Unfortunately when working with others though, disagreements and conflicts

occasionally arise; however, reviewers are expected to assess people truthfully, fairly, and professionally based on their merit despite personal biases, feelings, or conflicts.

In order to deter biased evaluations: If the evaluator gives 4 or more substandard assessments - NEVER or INFREQUENTLY - on the survey items for a peer, they will be REQUIRED to make comments about each of those substandard items. The instructor reserves the right to investigate and overturn unwarranted assessments. Furthermore, the evaluator's professionalism grade may be penalized if the instructor believes the assessment to be egregious or hostile (Note: This does not suggest that substandard assessments should be avoided necessarily; it merely reflects justification for a poor assessment.). Finally, be mindful of Vanderbilt University's honor and student code of conduct.