TIPS FOR NEW PRINCIPAL INVESTIGATORS IN STATISTICS AND DATA SCIENCE EDUCATION RESEARCH

Mine Dogucu, PhD University of California Irvine 2023-08-05 at Preparing to Teach Workshop Toronto, Canada

You can access the slides to this talk on my website:

minedogucu.com/talks



OUTLINE





About Me (longer than usual) Research Methodology Running a lab



Disseminating your research

Conferences Manuscripts Other Products Grants



- Ph.D. in Quantitative Research, Evaluation, and Measurement at the Ohio State University
- Assistant Professor of Applied Statistics, New College of Florida
- Visiting Assistant Professor of Data Analytics, Denison University
- Lecturer (Teaching) of Statistics, University College London
- Assistant Professor of Teaching and Vice Chair of Undergraduate Studies, Department of Statistics, University of California Irvine

EXAMPLES OF MY PEER-REVIEWED PUBLICATIONS

- Dogucu, M. & Hu, J. (2022) <u>The Current</u> <u>State of Undergraduate Bayesian Education</u> <u>and Recommendations for the Future</u>. The American Statistician, 74(2), 405-413.
- Dogucu, M. Johnson, A.A. & Ott, M. (2023) <u>Framework for Accessible and</u> <u>Inclusive Teaching Materials for Statistics</u> <u>and Data Science Courses</u>. Journal of Statistics and Data Science Education. 31(2), 144-150.
- Demirci, S., Dogucu, M., Zieffler, A. & Rosenber, J. (In Press) Learning Difficulties of Introductory Data Science Students In E. Jones (Ed) Proceedings of the International Association for Statistical Education Satellite Conference. Online.
- Full-list can be found on my <u>website</u> and <u>Google Scholar</u>

EXAMPLES OF MY OTHER PRODUCTS

- Johnson, A.A., Otts, M. & Dogucu, M. (2022), <u>Bayes Rules! An Introduction to</u> <u>Applied Bayesian Modeling</u>. CRC Press. 1st edition.
- Ricci, F.Z.**, Medina, C.** & Dogucu, M. <u>R</u> package gradetools: Tools to Assist with Providing Grades and Personalized Feedback to Students. GitHub, March 2022.
- Data Pedagogy Blog

MY GRANT PROPOSALS

- <u>SoCal Data Science</u>, co-PI (funded)
- Irvine Summer Institute in Biostatistics and Undergraduate Data Science (funded)
- <u>National Science Foundation Research</u> <u>Traineeship (NRT) Program (not funded)</u>
- <u>Bayes BATS</u> (funded)
- <u>NSF CAREER</u> (under review)





- Embrace qualitative research methods
- If possible, get training if qualitative research methods
 - Focus groups
 - Think out loud protocols
 - Structured, semi-structured interviews
 - Observations
- Resource: <u>How to Design and</u> <u>Evaluate Research in Education</u>
- Start thinking about Institutional Review Board (IRB) process early on.



- Be curious, don't do research because of fear of "publish or perish".
- Read a lot.
- Think of research and note down your curiosities as you teach
- Build questions FOR your own teaching

RUNNING A LAB

RECRUIT	MANAGEMENT	SUPPORT
Don't be lonely in your lab. Recruit students!	Project management and people management are both important.	Seek support from staff.

WRITING TIPS

- Consider smaller projects such as conference talk and blog posts before a full manuscript.
- Write every day.
- Write first thing in the morning.
- Write first, polish later.
- Move cell phone out of sight.
- Use an app to block internet/social media.



PUBLISHING PEER-REVIEWED WORK

You don't have to start alone. Find a collaborator.

Start with a pre-print to get feedback from the community.

Get to know the journal well (more tips on this on the next two slides).

Consider conferences such as IASE Satellite or ICOTS etc. which publish peer-reviewed proceedings.

(SOME) JOURNALS OF INTEREST

Journal of Statistics and Data Science Education Statistics Education Research Journal The American Statistician, Teacher's Corner Teaching Statistics Technology Innovations in Statistics Education



JOURNAL WORK

Read	Understand	Review
Subscribe to notifications and read regularly	Read the author guidelines	Sign up to be a reviewer

BLOGS

Examples:

- <u>Teach Data Science</u>
- <u>Ask Good Questions</u>
- Citizen Statistician
- <u>Statistics Teaching and Learning Corner</u>
- Data Pedagogy

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OTHER DISSEMINATION VENUES



- Podcasts
- Magazines
 - Amstat News
 - Significance
 - AMS Notices
- Local Meetups

GRANT WRITING

- Sign up on research.gov and start a proposal.
- Read example grant proposals.
- Start with a collaboration with a senior colleague.
- My strategy: start with a small grant. At campus level, start with a seed grant. At the federal level aim for a lower budget initially.
- Sign up to be a reviewer by reaching out to the program officer.
- Plan very early.

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Federica Zoe Ricci



Dr. Sinem Demirci



Dr. Wendy Rummerfield



Catalina Medina





QUESTIONS?

- Email: <u>mdogucu@uci.edu</u>
- Twitter: <u>twitter.com/MineDogucu</u>
- Mastodon: <u>mastodon.social/@MineDogucu</u>
- LinkedIn: linkedin.com/in/minedogucu/