

Teaching with GAISE: Statistical Literacy for the 21st Century

Panelists:

Monica Dabos, College of the Canyons

Joe Gerda, College of the Canyons

Kathy Kubo, College of the Canyons

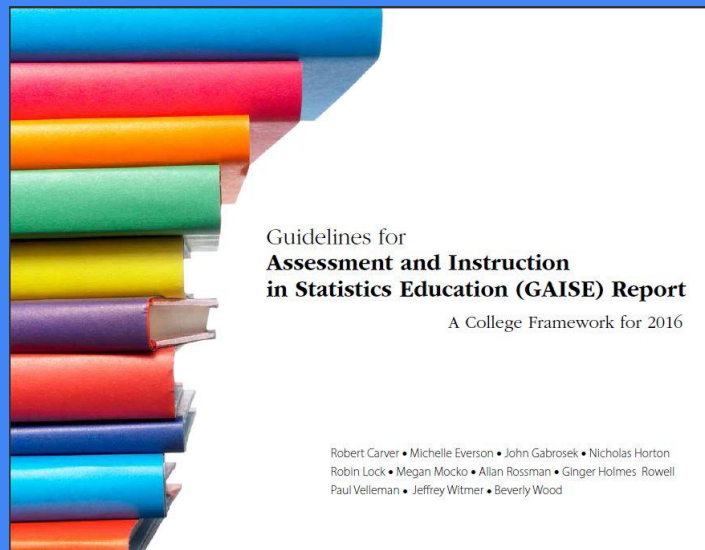
Rebecca Wong, West Valley College

Moderators:

Robert Carver, Stonehill College

Megan Mocko, University of Florida

Beverly Wood, Embry-Riddle Aeronautical University



Have you heard of the GAISE 2016 College Report or the original GAISE College Report?

- a.) I have not heard of either report.
- b.) I have heard of at least one of them, but don't know much about them.
- c.) I am only familiar with the original report.
- d.) I have heard of them and I am somewhat familiar with the contents.
- e.) I have heard of both and have read them thoroughly.

Introduction

Purpose - In August 2016, the American Statistical Association endorsed the GAISE (Guidelines for Assessment and Instruction in Statistics Education) College Report 2016.

Impacting Statistical Literacy

- 4 panelists from Community Colleges
- 3 members from the GAISE 2016 writing team

Outline

Why? Why do we need to change? What do our current students need to be productive members in the workforce?

How? How has your course changed in the past 5 years and why?

What? How did the panelist get started making changes? What is a good start starting point? What change would you recommend?

How do you sustain momentum? What are your favorite resources? How can GAISE help?

WHY

Panelists:
Kathy Kubo
Joe Gerda

Moderator:
Beverly Wood

- Why do we need to change?
- What do our current students need to be productive members in the workforce?

Joe Gerda and Kathy Kubo

Why Change?

- research on student learning
- convenient ways of obtaining and managing real and large data sets
- widespread availability of user-friendly software
- textbooks and materials that provide a conceptual approach

Joe Gerda and Kathy Kubo

What do our current students need to be productive members in the workforce?

- Make sense of data
- Communicate appropriate decisions based using statistical thinking
- Skepticism about data origination (where it is from, why it was created, limitations)
- Meaningful experience working as part of a team

How much impact has GAISE had on your institutions' introduction to statistics course?

- a.) The intro course at our institution is still pre- GAISE.
- b.) The intro course has been undergoing some changes in line with GAISE.
- c.) The intro course at our institution has been undergoing some changes, but has had some trouble sustaining these changes.
- d.)The intro course at our institution follows the GAISE guidelines fairly closely.
- e.) I am not really sure if my course is in line with GAISE yet. I have not heard enough about it.

HOW: Personal Stories

Panelists:

Joe Gerda

Rebecca Wong

Moderator:

Robert Carver

How has your course changed in
the past 5 years and why?

Joe Gerda

- Real data (survey students in all classes)
- More presentations (first day poster, mini-presentation, group project)
- Essay writing (“drinks in the last week” disaggregated by “sex” and choosing the better explanatory variable for predicting the response variable)
- Managing “productive struggle” and creating “explicit connections”

Rebecca Wong

Move from calculator to software for analysis

Assessment - no data entry, more analysis (example: answering questions based on the output of a regression analysis)

Intentional discussion of statistical literacy

Discussion of statistics as a major and career pathway

Using GAISE as a guidepost with more intentionality

The 4 C's: critical thinking, collaboration, communication, creativity

What

Panelists:

Monica Dabos

Kathy Kubo

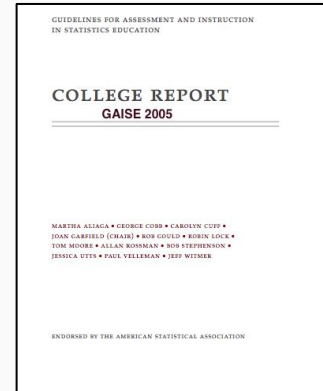
Moderator:

Megan Mocko

- How did the panelist get started making changes?
- What is a good starting point?
- What change would the panelists recommend?

Monica Dabos ~ My Personal Experience

- The First GAISE 2005
- Using Technology
- Some challenges and some blessings
 - No calculators
 - Martha Aliaga ~ Interactive Statistics
 - Going to USCOTS (United States Conference On Teaching Statistics)



Types of Challenges

- 1) Personal limitations
- 2) Institutions limitations

Personal limitations

- We may have limited understanding of both statistical concepts but also the limited understanding of the language of GAISE
 - Technology = is a calculator enough technology?
 - Activities = Is filling out a worksheet on how to do standard deviation by hand an activity?
 - Statistical thinking = ?

Institution Limitations

- No access to technology
- Resistance to change
- The mandatory textbook is outdated

Where would you start?

- Start small,
 - trying to implement **ALL** at once is very challenging for you and for your institution.
- Start where you feel the most comfortable, sure, secure and clear

What change would you recommend?

- **STOP lecturing**

- **start where you have control = Your teaching style**

- **Like merging lanes on the HWY**

- **start with the thought of wanting to change your lectures and then gentle move toward the direction of active learning**

Kathy Kubo

- Read the GAISE report and focus on one aspect
- Find a mentor and/or teaching partner
- Seek professional development opportunities to improve teaching practice
- Recommendation: Choose the topic/concept that you're most interested in changing

How: Sustaining Momentum

Panelists:

Rebecca Wong

Monica Dabos

Moderator:

Beverly Wood

- What are your favorite resources?
- How can GAISE help?

Rebecca Wong

GAISE appendices

ASA (American Statistical Association) website: This Is Statistics and other resources

Twitter (daily source of “real world” topics for discussion)

Conferences (AMATYC, ICTCM, and others)

My students (get them excited and it’s contagious)

Monica Dabos

How do I keep going on the path?



I Love the Path

- I love this question, because this path never ends,
- Making tons of changes all at one time and never make another change for the next 20 years is not a path.
- I love paths because they mean that there is always a place to go.

The question is how do you keep in the path

- Keep yourself connected to the statistics education community
- Reading research from SERJ or JSE, going to USCOTS,
- connecting with leaders on the field of statistics education

Multivariate Thinking

- For me the latest and more clear message is the multivariate thinking
- Multivariate thinking does “NOT” = multivariate regression analysis (necessarily)

My First Attempt

- This semester
- I started with Multivariate thinking from the first day of class
- I gave my students a data set about employees at a company with several variables including gender, minority status, beginning salary, current salary, years of education, years at current job and job classification.

Students were asked to figure out questions of interest from this data

- Figuring out if the salary for males and females is different given the years at the job, education level, job classification.
- Helping my students and myself develop a Multivariate thinking is my personal new path on the teaching and learning of statistics
- USCOTS 2017
- I love Chris Wild presentation about “walking through the data”, and the visualization of “divide and conquer” [Chris Wild - Slides.pdf](#)

STAY Connected

- Appendix for GAISE
- STAY CONNECTED, Stay Connected, Stay Connected.
- USCOTS 2017 <https://www.causeweb.org/cause/uscots/uscots17/program>
- ICOTS 2018
- <http://iase-web.org/Conferences.php>
- eCOTS 2018
- USCOTS 2019
- **Note:** ASA membership is now \$54 for Two year colleges Code (2YEDUCATE)

What type of follow-up would be helpful?

Please respond in the Q and A box.

Link to GAISE 2016 College Report

Report:

- http://www.amstat.org/asa/files/pdfs/GAISE/GaiseCollege_Full.pdf