Engaging Diverse Learners Online

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Rebecca Wong, Ed.D.
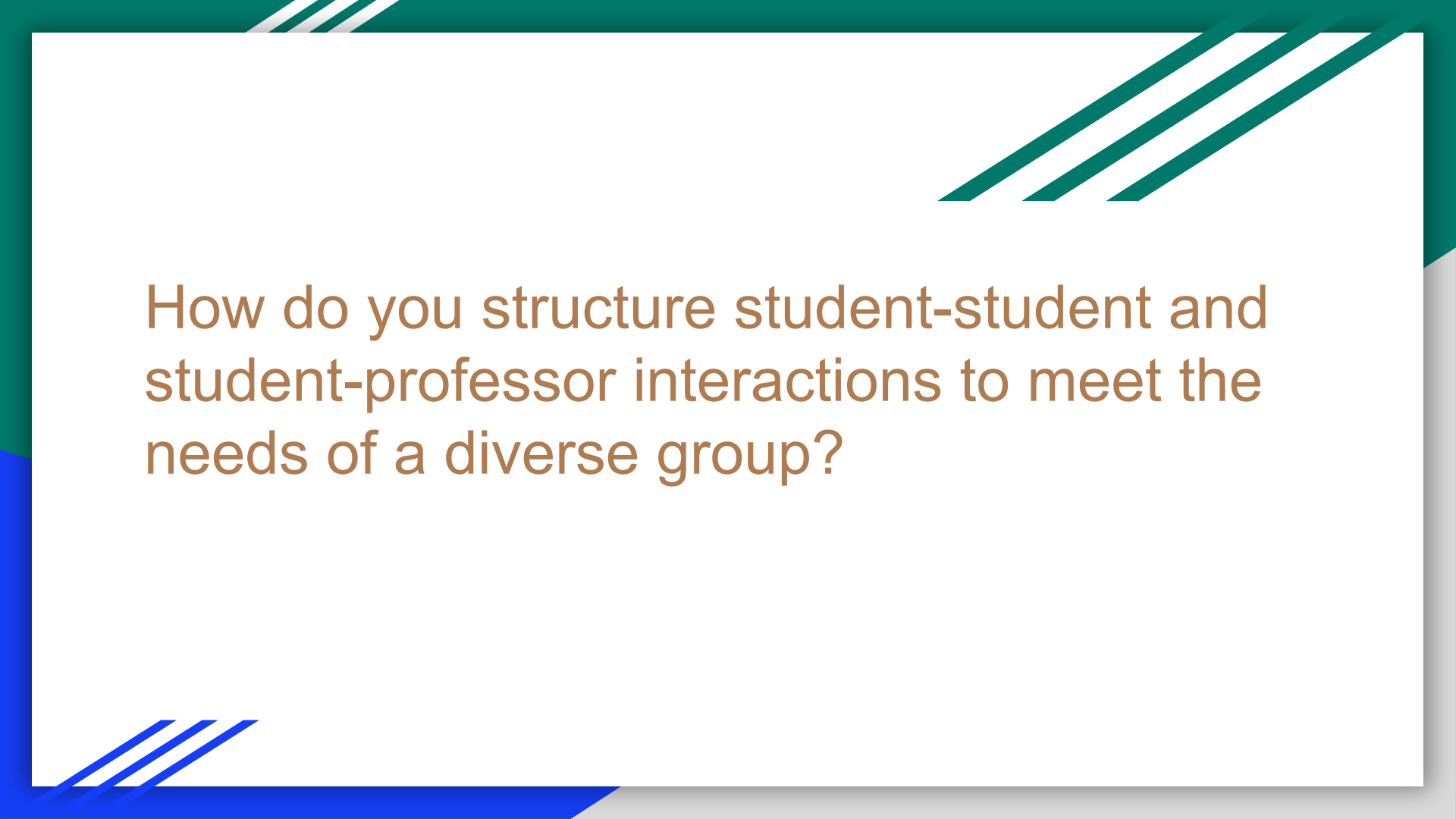**Beverly L. Wood, Ph.D.**

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EMBRY-RIDDLE
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FLORIDA | ARIZONA | WORLDWIDE

STAT 211 - Statistics with Aviation Applications

- Overwhelmingly male (84%) and over 25 years of age (80%); a little more than half have military ties

- Students advised in satellite offices: 5.2% in Europe, 5.4% in Asia/Pacific and 53.7% in US; remaining 35.7 are online, located everywhere

- 4% in-person classrooms, 7% through video conference portals, 89% asynchronously

- 9 week terms; 12 terms a year

- LMS: Canvas with AdobeConnect (soon to be Zoom)

How do you structure student-student and student-professor interactions to meet the needs of a diverse group?

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Student-Student

- Introduction discussion with "odd" questions that start conversations
- Whole class *and* small group discussions
- Peer review of projects
- eUnion course groups

Student-Professor

- Instructor Presence
- Synchronous and asynchronous office hours
- Involvement in discussions (use names)
- Video announcements, lectures and feedback
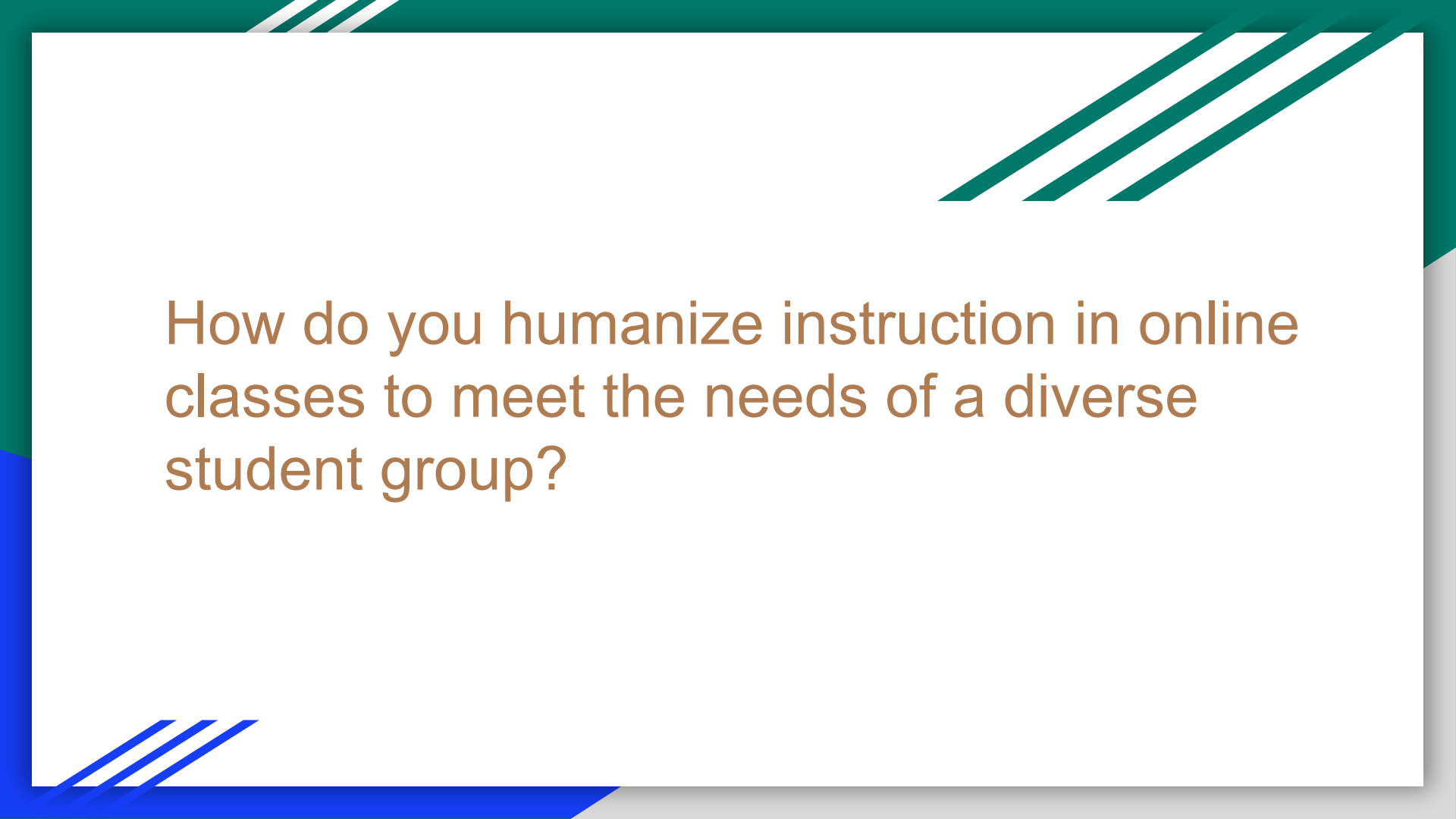- Rapid response to messages

Rebecca Wong, Ed.D.

Instructor

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MATH 10 Course

- Introductory statistics course

- Students reflect all the diversity of the California Community College system (gender, age, background…)

- New placement guidelines require placement of <u>all</u> students directly into transfer-level courses except in rare cases

- Fully online

- Asynchronous

- LMS: Canvas

How do you humanize instruction in online classes to meet the needs of a diverse student group?

What does it mean to "humanize" online instruction?

- Convey your human presence, empathy, and awareness with intentionality
- Students relate to instructor as more than a content-area expert and see themselves as part of a larger community of learners
- Results?
  - Increase in student motivation and course engagement
  - Increase in student success

Meet Your Instructor Video

Instructor is more than a content area expert.

Be:

- Present
- Empathetic
- Aware

I

Humanizing Course Design

- Give students choices (ex: explore data set of interest to them)
  - Drone Strikes in Pakistan
  - VTA Ridership on Line 38
  - Casino slot machine payouts
- Encourage creativity (ex: blogs, posters, infographic, Pecha Kucha)
- Connection/Collaboration (ex: breakout rooms, "Interacts" (https://bit.ly/3db5QbI))

What does equity have to do with it?

**Students cannot learn if they are fearful or anxious.**

Does your syllabus:

- Welcome students into a classroom where they will be cared for
- Validate students' ability to be successful
- Emphasize partnership where students and faculty work together to ensure success

Equitable Syllabus: A Story
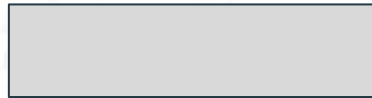
I stopped making my syllabi about policing behavior after reading an article about a mother who obeyed her professor's decree to turn off her cell phone in class and missed the call from the daycare saying her child had suffered an allergic reaction and was taken to the hospital. twitter.com/Jessifer/statu…
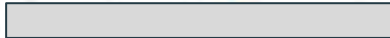
I wish it went without saying that syllabi should not be instruments of abuse.

Does It Really Make a Difference?
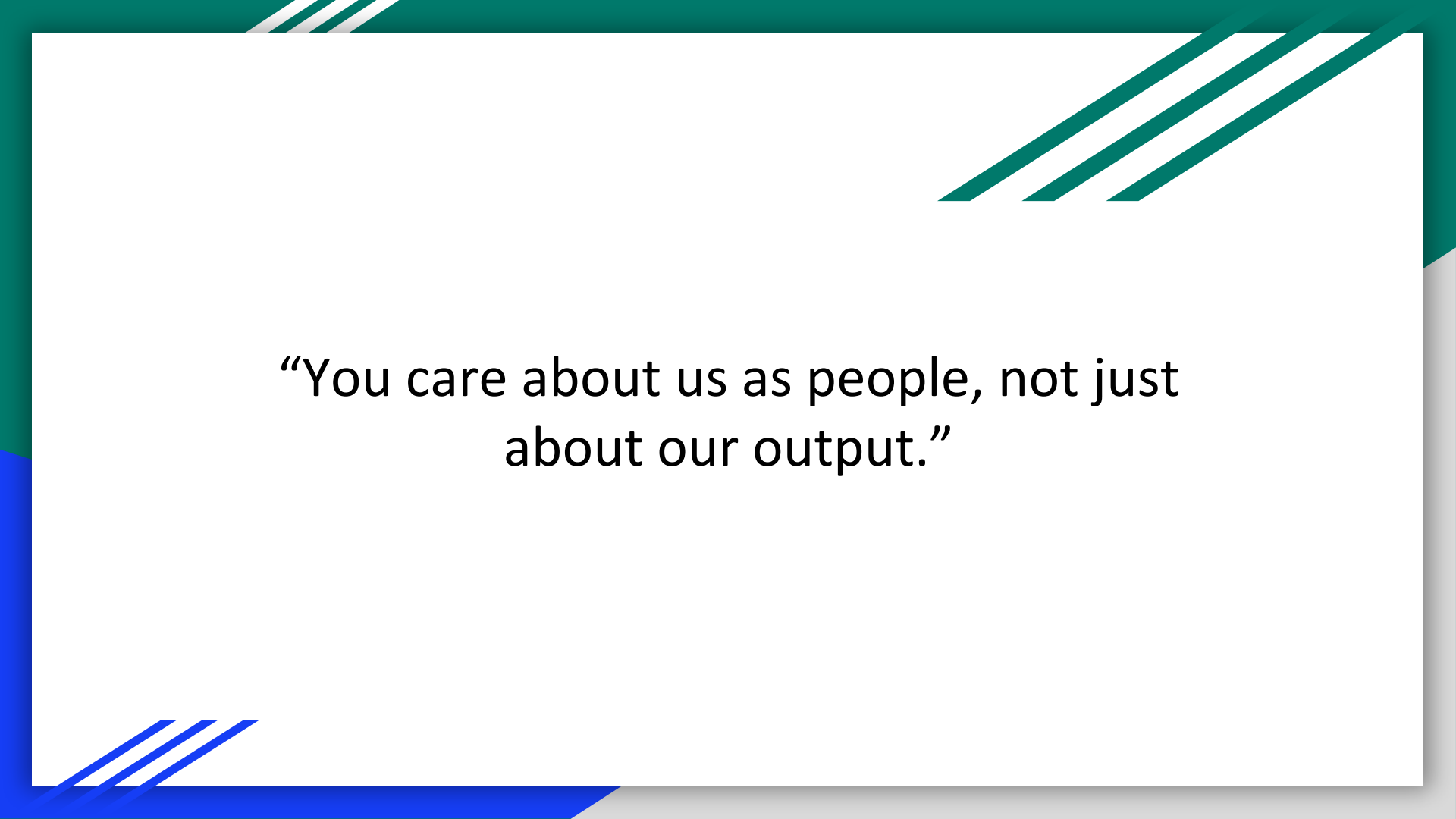
Question 5   `0`   / 0 pts

Write any other questions, comments, suggestions, or anything else you would like to say about this course or this professor.

Your Answer:

I was scared about taking ENG 1A, I heard it was an intensive course and I researched many english professors and I found Ms. Apigo

Everyone seemed to love her and I can personally see why. She made me feel welcomed and I didnt realize how a professor can change your perspective on a course so much

"You care about us as people, not just about our output."

Additional Resources

- https://brocansky.com/humanizing-infographic
- https://www.chronicle.com/interactives/advice-syllabus
- https://www.cuesta.edu/about/documents/vpaa-docs/Syllabus_Review_Protocol_CUE.pdf
- https://onlinenetworkofeducators.org/2020/05/13/new-pocketpd-guide-humanizing/

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STAT 217 Course

- Introductory statistics course

- Social sciences students

- Quarter (10 weeks)

- Majority female (about 80%)

- Mix of freshman, sophomore, junior (few seniors)

- Fully online (except for exams)

- Asynchronous

- LMS: Moodle (soon Canvas)

How can you use assignments to engage a diverse group of students in an online class?

Interactions in an online setting

GOALS:
- Participation by <u>all</u> students
- Students helping each other and learning together

Collaborative Keys
- Started with *Laura Le* from University of Minnesota

Part 1: Can Dogs Understand Human Cues?

1. Identify the variable in the study. Is this variable quantitative or categorical? What are the possible levels of this variable?

13. Consider the graph from #11.
   a) **Using the context of the problem**, explain what a dot on the plot represents.

   b) Where does 9 heads fall in the distribution? Would you consider it an unusual outcome or a fairly typical outcome for the number of heads in 10 flips?

   c) Based on your answer to the previous question, do you think it is plausible (believable) that Harley was just guessing which cup to choose?

14. Sketch the plot with 1000 different simulated samples.

17. Do the results of this study appear to be statistically significant? *Statistical significance* means that the observed result is unlikely to have occurred by chance alone.

Collaborative Key - SET UP 1

- Individual completion of activities
- 1 Collaborative Key for the whole class
- <u>All</u> questions from activity
- Interactions:
  1) 1st contribution
  2) Professor's feedback
  3) 2nd contribution
- Graded on completion

More student-professor interactions!

20. Are you comfortable with concluding from this study that the diet used causes a difference in BMI change? Justify your answer.

Izzy: Yes, because the evidence we found suggests there is a correlation between a specific diet resulting in women's BMIs going down.

PROFESSOR: Answer is not correct. Finding a statistically significant result is not enough to make a causal claim.
Izzy, what else is needed in the design of the study to allow you to make a causal claim?

Izzy: I am not 100% sure, can you point me in the right direction? I know a causal claim is any assertion that invokes causal relationships between variables?

Kaitlyn: Isn't it that we can make a causal claim because random assignment was used in the study which nullifies any potential confounding variables from affecting the results?

PROFESSOR: Yes, random assignment does tend to balance out confounding variables and this allows you to make a causal claim.
We have evidence that the Atkins diet causes a higher change in BMI, when compared to ORNISH, LEARN, and ZONE because this is a randomized experiment (random assignment was used in the design of the study). When random assignment is used confounding variables tend to be balanced out between groups.

Changes to Collaborative Keys

Weekly assignments

- Individual completion of activities
- Collaborative Key + Cooperative Learning structure
  - Individual accountability
  - Group roles
  - Positive interdependence & shared goal

Collaborative Key - OPTION 2

- 1 Collaborative Key per group
- Students in groups of 2-3
- <u>Some</u> questions from activity
- Interactions:
  1) Initial answer
  2) Discussion
      Resource: Wrap-up Videos
  3) Final group answer
- Graded on correctness

More student-student interactions!

Initial answers

9. Use the applet to find the p-value. Sketch or take a screen shot of the plot with the highlighted area used to calculate the p-value. Make sure the screen shot shows the p-value. Report the p-value.

Hannah: The p-value I obtained is 0.530.

Elise:

Discussion

Final answer
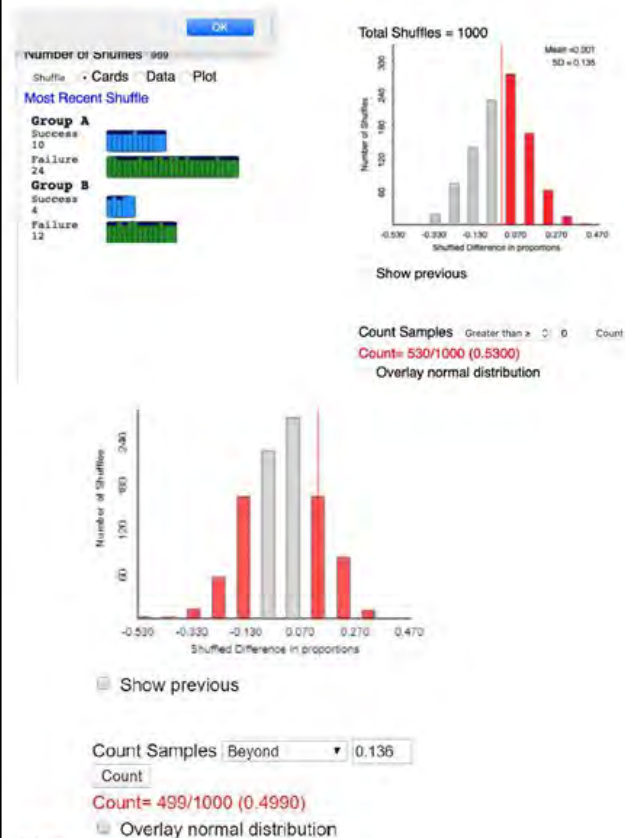
Hannah: Both of our distributions are correct in the sense that we both obtained a p-value close to 0.5. However, in my distribution, I was confused about whether or not it was 2-sided, so I did not make my distribution 2-sided which led me to an incorrect answer.

Elise: I think you also put in the wrong statistic? The null hypothesis is 0, but the statistic is not.

Hannah: I agree, I think my statistic may be wrong as well. I was confused about how to make the distribution for this question and I think I assumed to put the null hypothesis as the statistic I guess, I was pretty confused. I think your graph looks correct. Now I see from the wrap-ups that the statistic should in fact be 0.136.

Elise: Yeah, I did that as well too and first tried to put in the number 0 but realized that it was not a statistic.

FINAL GROUP ANSWER

Elise: the p-value would be around 0.5
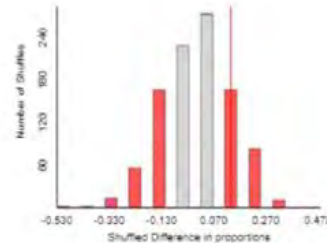
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Count Samples Beyond ▾ 0.136
Count

12. Interpret the p-value. Note that I am NOT asking about the strength of evidence against the null hypothesis, I am asking for an *interpretation* of the p-value (e.g. the p-value is the probability/proportion of ....)

INITIAL ANSWERS

Patrick: The P-Value of .032 is the probability of observing a sample MAD of .055 or greater under the assumption that the null hypothesis is true.

Alice: The p-value of 0.027 is the probability of observation the sample MAD of .055 or greater assuming that the null hypothesis is correct.

Austin: We got a p-value of 0.038 which is the proportion of difference in the reuse of towels between different methods

DISCUSSION

Patrick: We have pretty similar answers. Austin, be sure to include the MAD.

Alice: Patrick, we can go with your answer since we used your answer in the last question and the p-value matches. Austin, remember to include the MAD in your interpretation.

Austin: Your completely right I need to include the MAD statistic. Since I got it wrong in the last my value was a little off . The wrap up videos were alot of help in explaining it and gave the same exact answer as the one the Patrick has posted.

FINAL ANSWER

The P-Value of .032 is the probability of observing a sample MAD of .055 or greater under the assumption that the null hypothesis is true.

Collaborative Keys - COMPARISON

OPTION 1	OPTION 2
1 Collaborative Key for the **whole class**	1 Collaborative Key per **group** (groups of 2-3 students)
All questions from activity	**Some** questions from activity
Interactions: STUDENT X PROFESSOR	Interactions: STUDENT X STUDENT
1) 1st contribution 2) Professor's feedback 3) 2nd contribution	1) Initial answer 2) Discussion Resource: Watch Wrap-up videos 3) Final answer
Graded on **completion**	Graded on **correctness**

Schedule

	SUN	MON	TUES	WED	THUR	FRI	SAT
TIME ALLOCATION	Read book/ Watch videos	Work on Reading quiz Complete Activity 1 individually	Group discussion about Activity1	Finalize group discussion about Activity 1 Complete Activity 2 individually	Group discussion about Activity 2	Finalize group discussion about Activity 2 Work on Homework	Finish Homework
DUE DATES		Reading quiz + Upload answers to Activity 1 + Paste answers to Collaborative Key for Activity 1 11pm		Submit Collaborative Key (Activity 1) + Upload answers to Activity 2 + Paste answers to Collaborative Key for Activity 2 11pm		Submit Collaborative Key (Activity 2) + Submit Participation Survey 11pm	Submit Homework 11pm

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How can you use assignments to engage a diverse group of students in an online class?

~ Anelise

Lingering Questions

Beverly

For Beverly, you said you have synchronous discussions. What do your online discussions look like? How do you ensure that students participate?

Can Bev give more detail about what is in her "feedback" videos?

Does teaching online using others' lecture videos lead to decreased student engagement?

Rebecca

I was discouraged by the lack of collaborative spirit among instructors as we were thrust online. Are there any 'live' chat opportunities to interact with instructors outside my institution? Or a list of 'mentors' for those of us who have been pretty much on our own?

Anelise

Can Anelise provide more information about the timing of an assignment with collaborative keys, i.e. how long do students have to do it on their own and then how long do they have to work together on the key?

For Anelise, how often do you assign the collaborative keys? Are they the homework assignments for the course or do they have other homework as well? If in groups students only answer 5 of the questions or so, are they still responsible for working on all the other questions on their own?

Not really sure what will happen in the fall, but if we have the choice between synchronous and asynchronous, which would you recommend and why? Or what are the pros and cons we should consider?