

Stephen F. Austin State University

## SFA ScholarWorks

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Diversity Conference

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Feb 12th, 10:30 AM - 11:20 AM

### **Diverse co-teaching: a one-step strategy for assessment, integration, collegiality, transformation, professional and personal growth for the university community**

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**Diverse Co-teaching: A One-Step Strategy for Assessment, Integration, Collegiality, Transformation, and Professional & Personal Growth for the University Community**



**by Darrell Fry and 'Tayo Odunuga**

Diversity in the New Decade: Defining the New Normal

February 12, 2012

7<sup>th</sup> Annual Diversity Conference

Presented by The Office of Multicultural Affairs

Stephen F. Austin State University

# SFA's Mission

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- Our Overarching Goal: Transformative Experiences for SFA Students
- We will engage our students in experiences that prepare them for the challenges of living in a global community.
- We submit that diverse co-teaching provides one avenue to provide this Transformative Experience



# What is co-teaching?

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Lynee Cook and Marilyn Friend defined co-teaching as

“two or more professionals delivering substantive instruction to a diverse, or blended, group of students in a single physical space”

1. Two educators
2. Deliver substantial instruction
3. Diverse group of students
4. Single classroom or physical space

Cook, Lynne, and Marilyn Friend. "Co-teaching: Guidelines for creating effective practices." *Focus on exceptional children* 28 (1995).

# How we meet the criteria

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1. Two educators
  - Tayo Odunuga, Ph.D. in Biochemistry
  - Darrell Fry, Ph.D. in Analytical Chemistry
2. Deliver substantial instruction
  - Each “delivers” ~ 50% of the instruction while the other is in the room
  - We also set together: exams, homework, lab practical, virtual labs, electronic exams, etc...
3. Diverse group of students
  - White: 59%; Black: 14%; Hispanic: 19%; Other 8% -JackFacts
4. Single classroom or physical space or single ZOOM



# Substantial planning, execution and grading by both faculty

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- Planning
  - Joint syllabus—signed by both
  - Slides agreed upon
  - Homework problems to use
  - Text to use
- Execution
  - Course: both have to be present all of the time
  - Lab: across the hall from one another
  - Both agree on test questions
  - Both agree on grading rubric
- Assigning grades
  - Agree upon A,B,C,D cut-offs



# The importance of diversity: the human element

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- Everyone's contribution matters
  - Since we are all different, we will have unique contributions





# The importance of diversity: wasted talent

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“If you’re not using half the talent in your country... you’re not going to get too close to the top.”

Bill Gates

Statement about Saudi Arabia and using their available talent





# The importance of diversity: a patriotic pitch

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Unchallenged US role in  
global technology & economic enterprise



China and India and others increasing  
investments in higher education



International student achievement in science  
& mathematics curricula in precollege settings



Increasing number of scientific publications from abroad



Wilson, Z. S., McGuire, S. Y., Limbach, P. A., Doyle, M. P., Marzilli, L. G., & Warner, I. M. (2014). Diversifying science, technology, engineering, and mathematics (STEM): an inquiry into successful approaches in chemistry. *Journal of Chemical Education*, 91(11), 1860-1866.



# The importance of diversity: wasted talent

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- The US infrastructure for human resource development in STEM is not producing optimal results.
- Only 7% of STEM doctorate degrees earned by minorities
  - Blacks, Latinos and Native Americans make up 30% of the population



Wilson, Z. S., McGuire, S. Y., Limbach, P. A., Doyle, M. P., Marzilli, L. G., & Warner, I. M. (2014). Diversifying science, technology, engineering, and mathematics (STEM): an inquiry into successful approaches in chemistry. *Journal of Chemical Education*, 91(11), 1860-1866.



# International Day of Women and Girls in Science: February 11<sup>th</sup> (yesterday)

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FRANCES ARNOLD  
Nobel Prize in Chemistry 2015

“We need science  
and we need the  
smartest minds.”



- From The Nobel Prize on Facebook.
- Accessed 2/11/2021

# Diverse co-teaching benefits: Faculty

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- Encourages professional growth
- Establishes a self-evaluating & self-regulating process for improvement
  - Non-threatening & encourages continuous improvement
- Not limited to a snap shot evaluation
  - The slides vs. the presentation vs. the homework vs. the exams
- Sets an expectation level for the course
- More fun & easier



# Diverse co-teaching benefits: Faculty assessing collegiality

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- ““Promotion” means advancement based on a faculty member’s academic credentials, meritorious performance, and collegiality in teaching, research/scholarly/creative accomplishments, and service.”\*
- What constitutes evidence of collegiality?
  - Working together at the business of the University.
  - Teaching a class together requires collegiality.
- How do we assess collegiality?
  - Co-teaching!!

\* <http://www.sfasu.edu/policies/academic-promotion-of-full-time-faculty-7.4.pdf>

# Diverse co-teaching benefits: Students

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- Two instructors are available for questions
- More balanced presentation of the material
- Better aligned lecture, homework, exams, final
- Provides a model of how to work with other people
- Provides a model of how to treat others professionally
- Provides a model of how to listen to another point of view



# Diverse co-teaching benefits: Students Transformative Experience

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- Different perspectives on the same topic lead to a richer understanding of the material
- Fry's question to the students: "Who is the only country to use nuclear weapons in an act of war?"
- Odunuga challenged
  - Provided a more global context for the US using nuclear weapons

# Diverse co-teaching benefits: Department

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- Sets an expectation level for the course
- Evaluation of collegiality



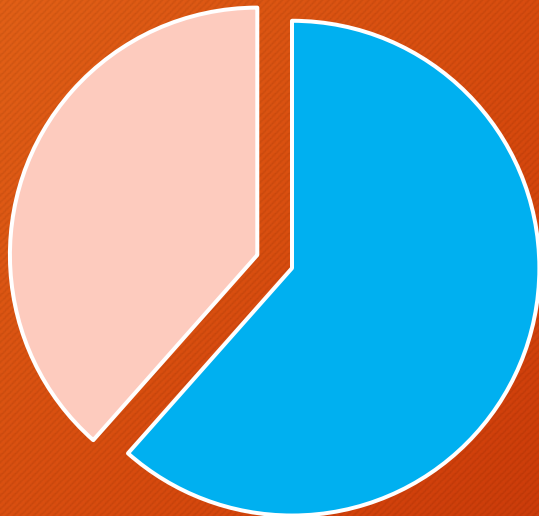
# Diverse co-teaching benefits: Chemistry and Biochemistry - a highly diverse and integrated department

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- Co-teaching a consequence of having a diverse qualified faculty
- Co-teaching then provides opportunity for seamless integration

Department of Chemistry & Biochemistry  
Racial Distribution

Department of Chemistry & Biochemistry  
Female/Male



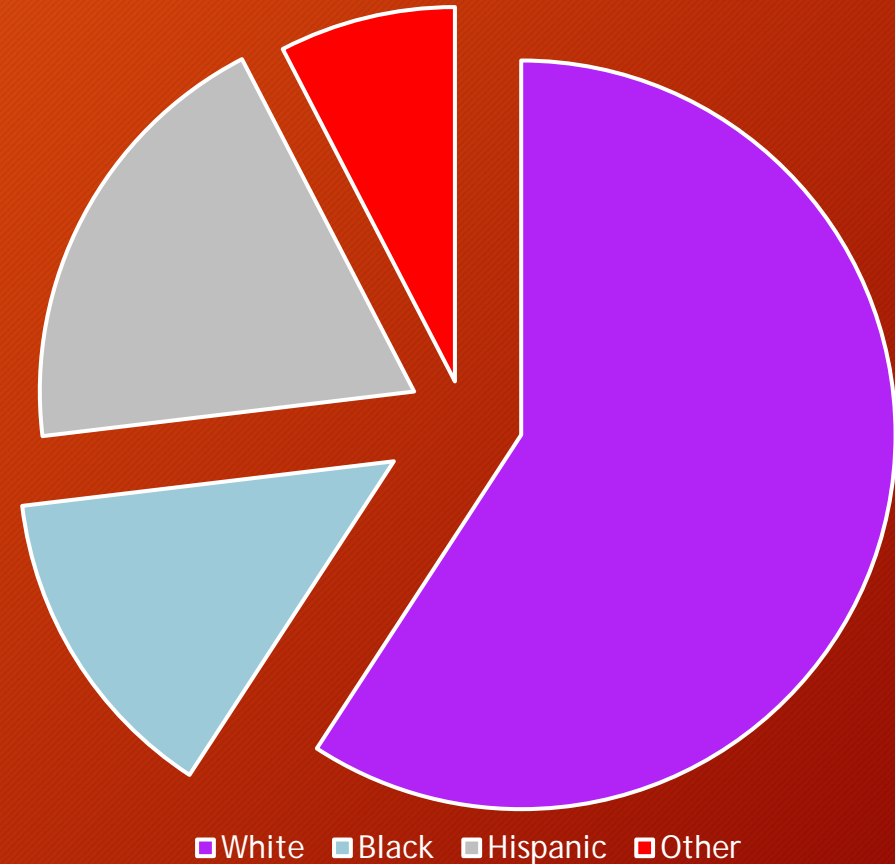
■ african ■ asian ■ white

# Diverse co-teaching benefits: University

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- Contributes to the Mission of the University
- Models behavior and attitudes conducive to integration

Student Headcount from Jackfacts





# Similar to Hippocratic Oath, do no harm

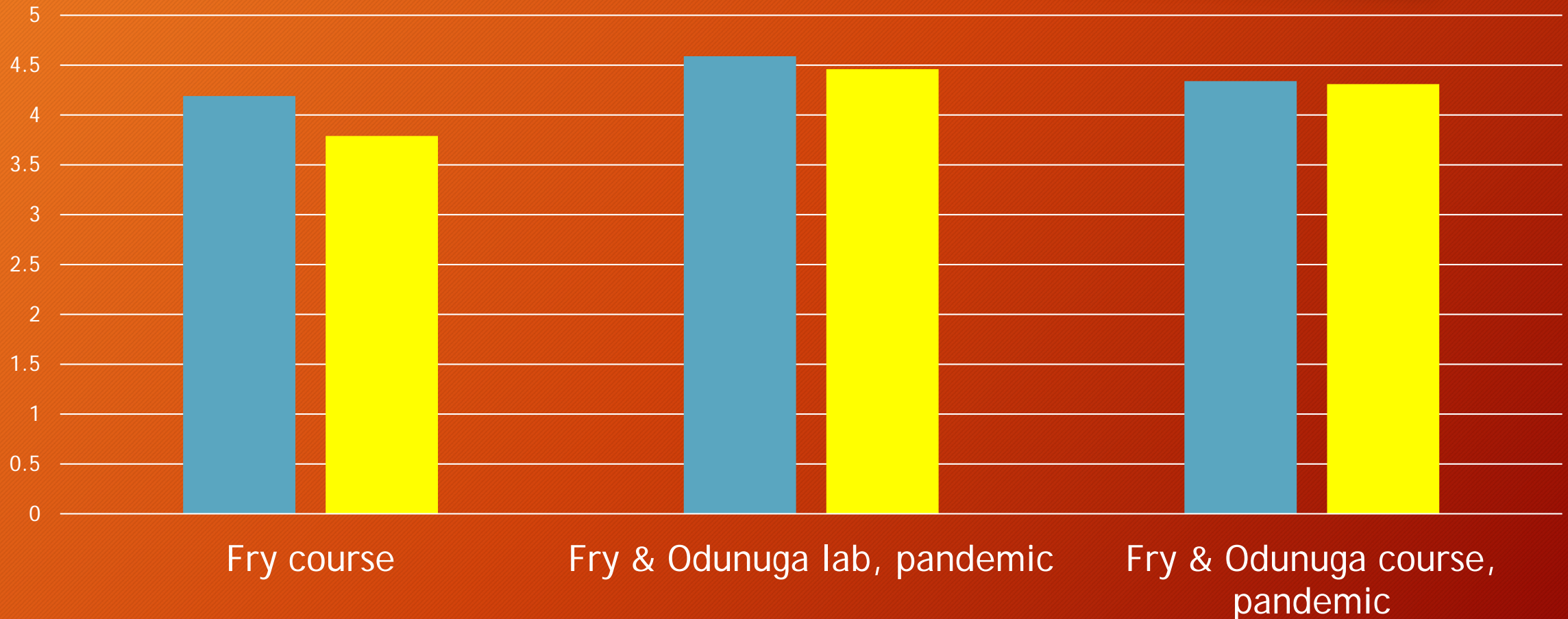
18

- Co-teaching should do no harm
  - Student evaluations
  - Students passing vs. students repeating

# Student Evaluation Comparison for Fry

Average student response to 10-15 questions  
**"Returned work in a timely manner"**

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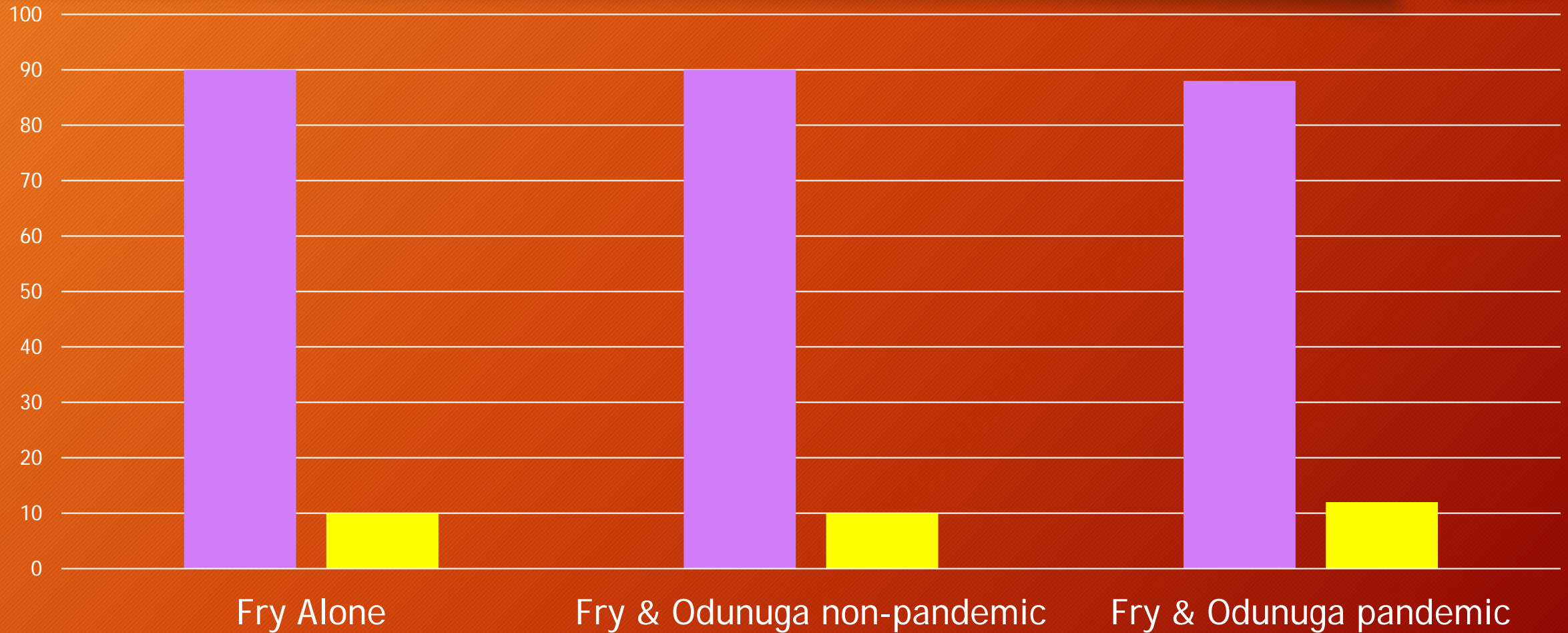




# Acceptable Student Outcomes

PASS vs. REPEAT

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# Specific advantages for Fry

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- Less stress
  - Setting rules that ...
  - Beta testing exam questions
  - Exams that are quick to grade
- More enjoyable
  - I look forward to “listening” to Odunuga’s Lectures because I learn something
  - I enjoy watching the students struggle with the material while someone else is lecturing



# Odunuga advantages of co-teaching

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- Less stress!
- New approach to effective teaching
- Opportunity to set better exams
- Opportunity to understand the material differently
- Enjoyable, relaxing and gratifying
  
- Compatibility is key

# Student comments pandemic

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- As you stated at the beginning of the course, "This summer class is like drinking from a water hose." I would definitely have to agree with that statement. The class has been taught in the best possible way considering we have had to overcome the obstacle of being online. Thank you for making this class reasonable and adjusting to the obstacles of COVID-19.
- I would like to let my professor know that im thankful for his understanding of my situation that i was at with my family and health. his is a very good teacher and help me when i had a few questions about homework or test. Lastly i wish he would add more jokes into his lecture because i found that his jokes where very funny.
- You have made this class very enjoyable through the online simulators, and have adjusted and adapted to the challenges of teaching an online course. Keep doing what you're doing. As a future educator, I aspire to overcome the challenges of being online much like you. Thank you for overcoming the obstacles of being online and adjusting to the changes that COVID-19 has brought us.



# Questions/Comments

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# References. All accessed 2/22/2021

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- Internet family: <https://www.familius.com/working-together-as-a-family#.YCWQff1Kh9M>
- Picture of I. Warner in lab
  - <https://www.225batonrouge.com/our-city/225-isiah-warner>
  - 2017 interview with Warner who was 70 at the time
  - In [225] magazine (caters to Baton Rouge area)
- Picture of I. Warner and group
  - <https://lsuscienceblog.squarespace.com/blog/2019/8/26/the-makings-of-a-master-mentor>
  - Nature Mentoring Award Jan 2020
  - Surrounded by former and current post-doc and docs
- Quote from The Guardian--
  - <https://www.theguardian.com/commentisfree/2015/jun/13/observer-editorial-britain-needs-more-female-scientists#:~:text=%E2%80%9CIf%20you're%20not%20using,half%20of%20the%20talent%20pool.>
  - From The Observer view on sexism in science
  - [\*Observer editorial\*](#)
- *Image of Bill Gates*
  - <https://www.forbes.com/profile/bill-gates/?sh=6157919b689f>
  - *Forbes Magazine Wealthiest People. Gates was #2 for this particular measurement.*



# Improvements we can make

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1. Advertise as co-teaching
2. Longitudinal study of students from the summer