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# Student retention through online faculty and student learning: Documenting and measuring impact on Hispanic students

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*Redefine the Possible™*

# Institutional Context

- Sacramento State University
  - Public university
  - 30,000+ students
  - Hispanic Serving Institution since 2016
- Project Components
  - Student Tutorial "Learning Online"
  - College Assistance Migrant Program (CAMP) technology program
  - Faculty Professional Development
  - STEM and GE Course Redesign



# Today's Plan

Data and evidence on how students, specifically Hispanic students, are measurably impacted by:

- Online Learning Tutorial: "Hornet Learning Online 101"
- Technology loan program: CAMP technology program
- Faculty Professional Development: Faculty Learning Communities
- Course Redesign: STEM and GE courses

# Student Tutorial: Hornet Learning Online 101

## Hornet Learning Online 101:

- One hour optional tutorial\*
- Delivered self paced online
- Basic Canvas use and navigation
- Growth mindset
- **Online learning readiness survey**
- Comprehensive directory for tutoring, advising, mentoring, basic needs, etc.
- Guidance on using AI



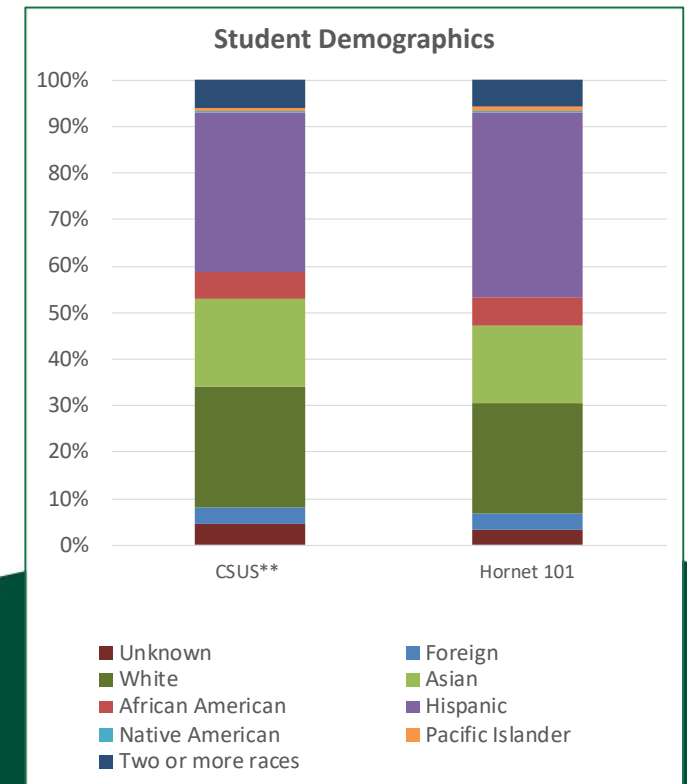
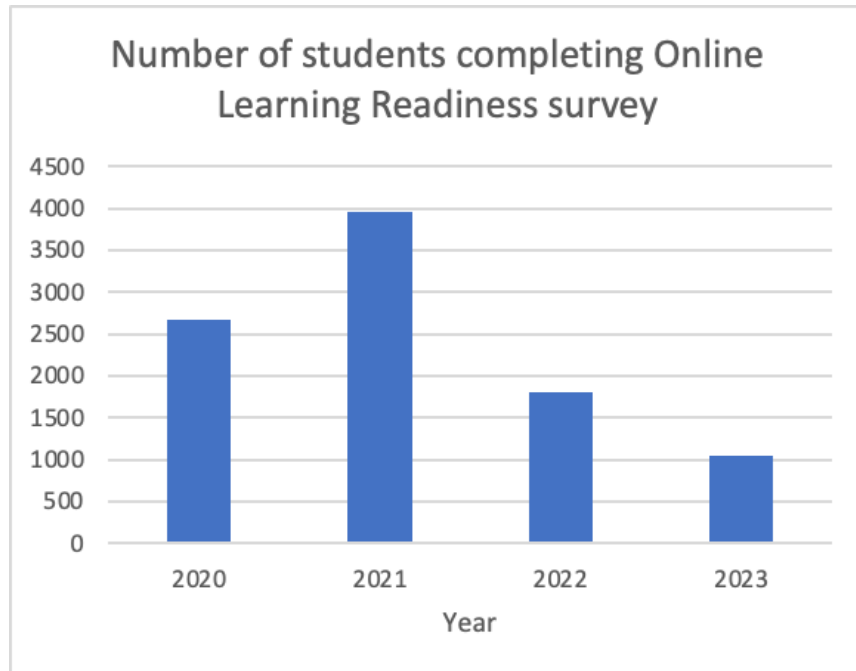
\* Based on CSU Channel Islands and Humboldt tutorial courses

# Student Online Tutorial: Hornet Learning Online 101

## Evidence of Impact on Hispanic Students

- 9480 surveys collected over 4 years

- Survey sample reasonably matches the campus demographics
- 3812 students (40.2%) identified as Hispanic



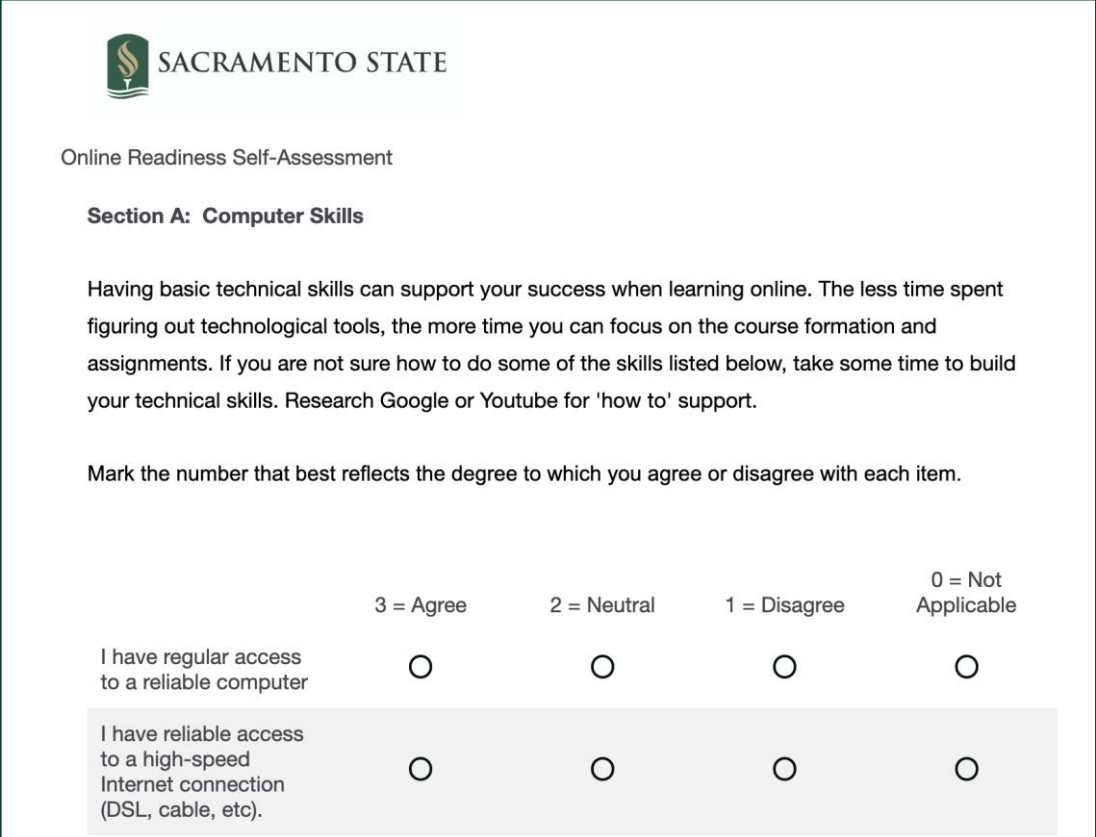



# Student Online Tutorial: Hornet Learning Online 101

## Evidence of Impact on Hispanic Students

### Online Learning Readiness Survey:

- 21 questions on
  - Computer Skills*
  - Time Management*
  - Academic Skills*
- Responses linked to student IDs and campus demographic files
- Responses disaggregated by ethnicity
- Analyzed for statistically significant differences between student ethnic groups



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Online Readiness Self-Assessment

**Section A: Computer Skills**

Having basic technical skills can support your success when learning online. The less time spent figuring out technological tools, the more time you can focus on the course formation and assignments. If you are not sure how to do some of the skills listed below, take some time to build your technical skills. Research Google or Youtube for 'how to' support.

Mark the number that best reflects the degree to which you agree or disagree with each item.

	3 = Agree	2 = Neutral	1 = Disagree	0 = Not Applicable
I have regular access to a reliable computer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have reliable access to a high-speed Internet connection (DSL, cable, etc).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# Student Online Tutorial: Hornet Learning Online 101

## Evidence of Impact on Hispanic Students

### Analysis Summary:

Strengths: Means  $\geq 2.75$  highlighted green

Challenges: Means are  $\leq 2.5$  highlighted orange

Overall counts of strengths (G) and Challenges (O)

### Specifically for Hispanic Students:

#### Strengths:

- Regular access to reliable computer
- Prioritizing responsibilities
- Following written instructions

#### Challenges:

- Having someone to help with computer challenges
- Managing time
- Participating in live class discussions

	IPEDS Race-Ethnicity Category							
	Asian N=1558 (17.6%) Mean	Black N=580 (6.5%) Mean	Hispanic N=3812 (43%) Mean	Native American N=15 (0.2%) Mean	Pacific Islander N=93 (1.0%) Mean	Two or More Races N=518 (5.8%) Mean	White N=1966 (22.2%) Mean	Unknown N=333 (3.8%) Mean
I feel comfortable participating in live class discussion.	2.36	2.52	2.39	2.33	2.34	2.43	2.60	2.58
I utilize active reading strategies (e.g. notes in the margin, questioning the reading) when I read.	2.52	2.55	2.57	2.87	2.51	2.59	2.68	2.60
I am good at following written instructions.	2.75	2.84	2.78	2.93	2.69	2.83	2.89	2.79
I have little or no trouble expressing myself in writing using formal grammar and spelling.	2.61	2.72	2.63	2.87	2.57	2.76	2.83	2.71
If I can't figure out something, I am comfortable asking my classmates or the instructor for help.	2.64	2.70	2.63	2.93	2.63	2.75	2.76	2.74
Number of Green (M $\geq 2.75$ ) and Orange (M $< 2.5$ ) Means	G = 7 O = 4	G = 9 O = 2	G = 8 O = 5	G = 10 O = 2	G = 5 O = 6	G = 12 O = 3	G = 14 O = 1	G = 9 O = 2

#### Overall:

- Hispanic students had 8 areas of strength and 5 areas of challenge compared to 14 areas of strength and 1 area of challenge for white students
- Hispanic students self assess as feeling less prepared

# Data is evidence of "what" is happening Next step is to find out the "why"

To investigate the "why" we focused on the CAMP program:

- College Assistance Migrant Program ([CAMP](#))
- Serves 85 first year students from families engaged in agriculture related work
- Majority of students are Hispanic
- Graduation rate declined sharply during remote online instruction Fall2020-Spring 2022

Spring 2020 57 graduates 76% of cohort

Spring 2021 64 graduates 85% of cohort

Spring 2022 29 graduates 39% of cohort

## College Assistance Migrant Program (CAMP)

Division Of Student Affairs





# College Assistance Migrant Program (CAMP)

## Insights into the "why"

Why were items in the survey challenges?

- Access to reliable high-speed internet connection. The majority of CAMP students come from rural areas where there is no reliable internet access.
- Access to someone who can help with computer challenges. Understanding that a great percentage of CAMP students are first generation and live at home. They don't have someone who can they turn for help within their household or family member.
- Managing time: The majority of the students have jobs. Any time they have available, they use it to work and put less time on their studies.
- Setting aside a regular 5-8 hours per week to devote to an online class. We experienced these challenges with online classes with our CAMP students during COVID. i.e. we had student who called the office as that their parents did not understand why students would spend so much time online and were urged to find a job. At the CAMP office, we met with student parents to explain the nature of online classes and the important for their sons/daughters to continue their studies online. To many parents only active physical labor = work. Passive computer use is not perceived as work.

# College Assistance Migrant Program (CAMP)

## More Insights ...

Even survey questions that appeared to be a strength for Hispanic students proved to have challenges:

Ex. Access to a reliable computer: Although 94% of Hispanic students reported having regular access to a reliable computer the CAMP program observed students attempting to take Engineering final exams on their mobile phones and other students without computers despite access to a campus computer loan program.

Aha moment: The campus computer loan process is not culturally responsive. It requires students to ask faculty to justify the loan and put in a request through central IT business unit.

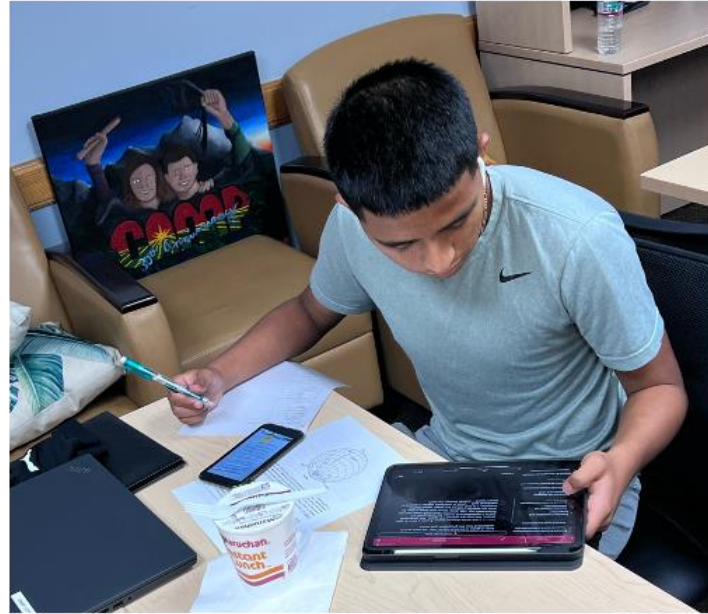
# College Assistance Migrant Program (CAMP): Solution phase 1: technology program Fall 2023

National Science Foundation Funded lap top loan program: 50 computers

- Long term computer loan (1 year or more) through the CAMP program from CAMP staff students know and trust. 9 computers on long term loan
- Short term computer loan inside the CAMP center where students can build community within the CAMP program and complete academic work with the support of peers and CAMP staff. 15 computers available for short term check out, at least 10-12 computers are used at any given time every day. That's an average of 50-60 check-outs per week



# Empowering CAMP Students Through the Computer Loan Program!



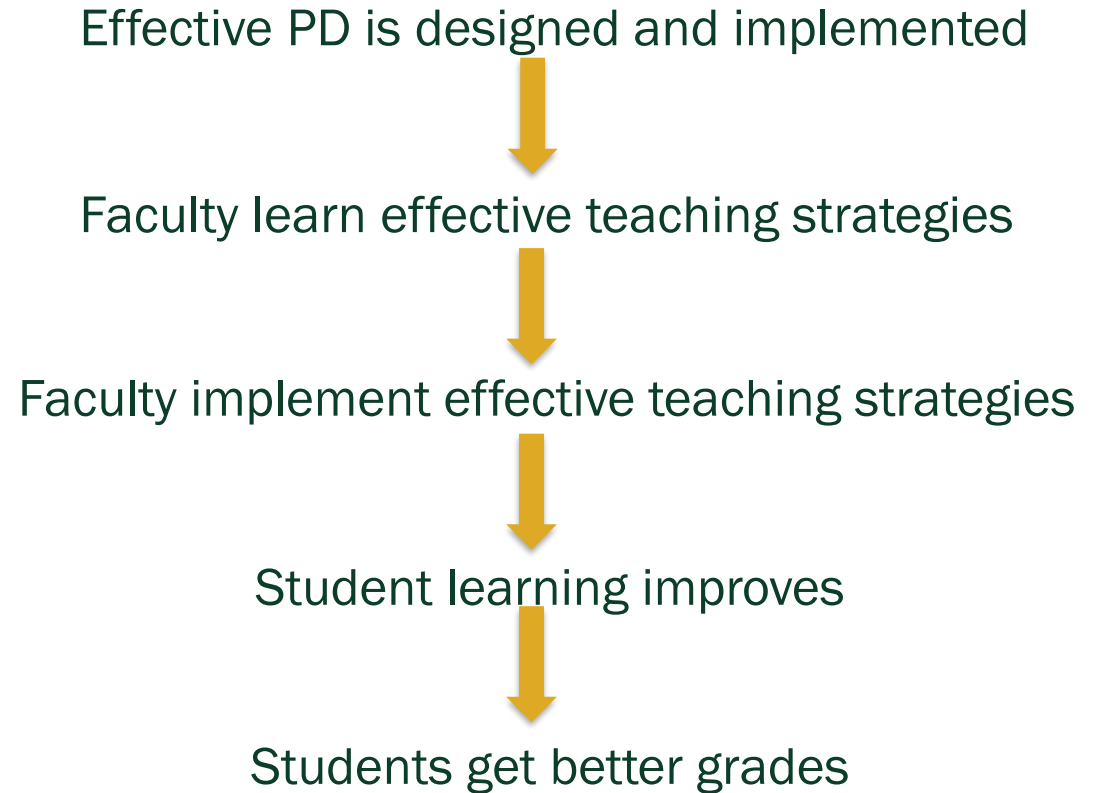
NSF STEMZone  
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TECH4Equity  
P031S230256  
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# Faculty Professional Development (PD): Evidence of Impact on student grades

- Assumption: Enhancing instruction through PD improves student learning and grades
- Theory of Change
- Research gap: Limited measures of impact of PD on student outcomes in higher education such as grades and/or retention.





# Research Study focused on STEM

## Question:

Can faculty development make a measurable impact on student course grades in STEM?

## Time frame:

Fall 2019-Fall 2020

## Data sources:

- Institutional faculty, student, course, and demographic data
- Program completion data on two types of PD programs

# STEM faculty participated in two Faculty Professional Development Programs

## General

- Develop online (Canvas) courses
- All disciplines
- Over 700 participants
- Cohorts of 30
- 3 weeks
- Asynchronous online
- STEM faculty reacted negatively

## STEM Sidecar

- Engage students online
- Engineering, Natural Science & Math
- 68 participants
- 7 small groups
- 6 weeks
- Synchronous online
- Faculty responded positively

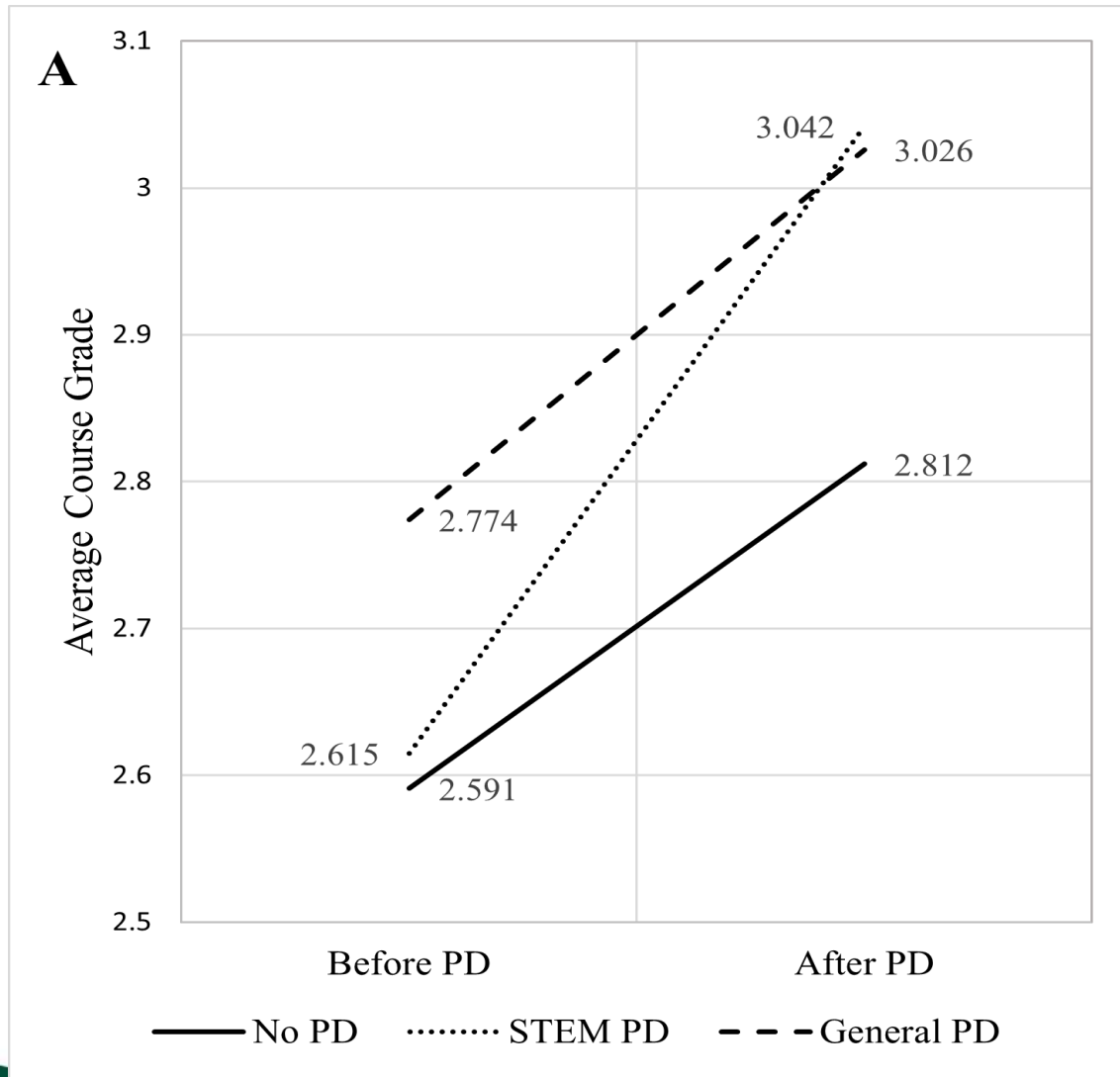
# Difference-in-Difference Analysis

$$(1) Y_{STEM} = B_0 + B_1(\text{STEM PD}) + B_2(\text{POST}) + B_3(\text{STEM PD} * \text{POST})$$

$$(2) Y_{General} = B_0 + B_1(\text{General PD}) + B_2(\text{POST}) + B_3(\text{General PD} * \text{POST})$$

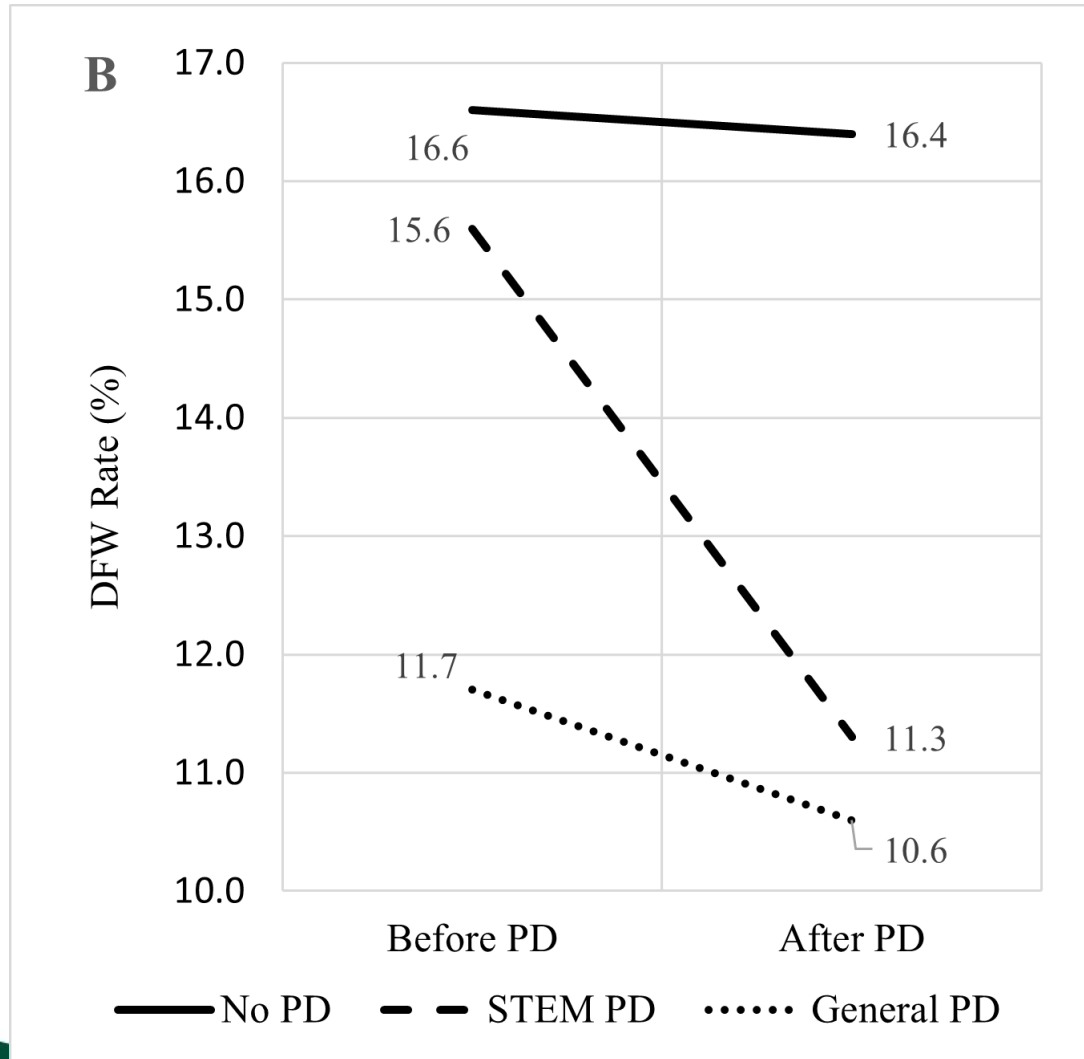
- $B_0$  = average course grade of students taught by control group instructors in the pre-PD period
- $B_1(\text{STEM PD})$  and  $B_1(\text{General PD})$  = difference in the average course grade in the pre-PD period of instructors in teach PD group, compared to the control group.
- $B_2(\text{POST})$  = difference in average course grade of control group instructors from the pre-PD period to the post-PD period.
- $B_3(\text{STEM PD})$  and  $B_3(\text{General PD})$  = difference-in-difference (pre-post difference between average course grade of the treatment group minus pre-post difference in average course grade of the control group).

# STEM PD Improved Course Grades



- General PD participants' course grades started out higher than those of STEM PD participants and non-participants
- General PD participants' course grades rose the same amount as those of non-participants
- STEM PD participants' course grades rose significantly more than those of non-participants.

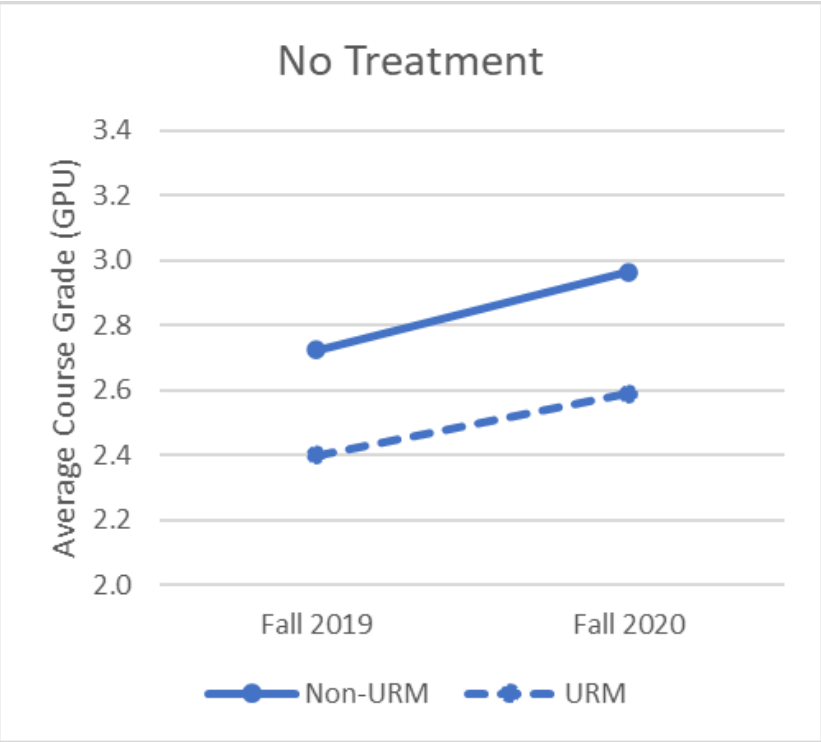
# STEM PD Improved DFW Rates



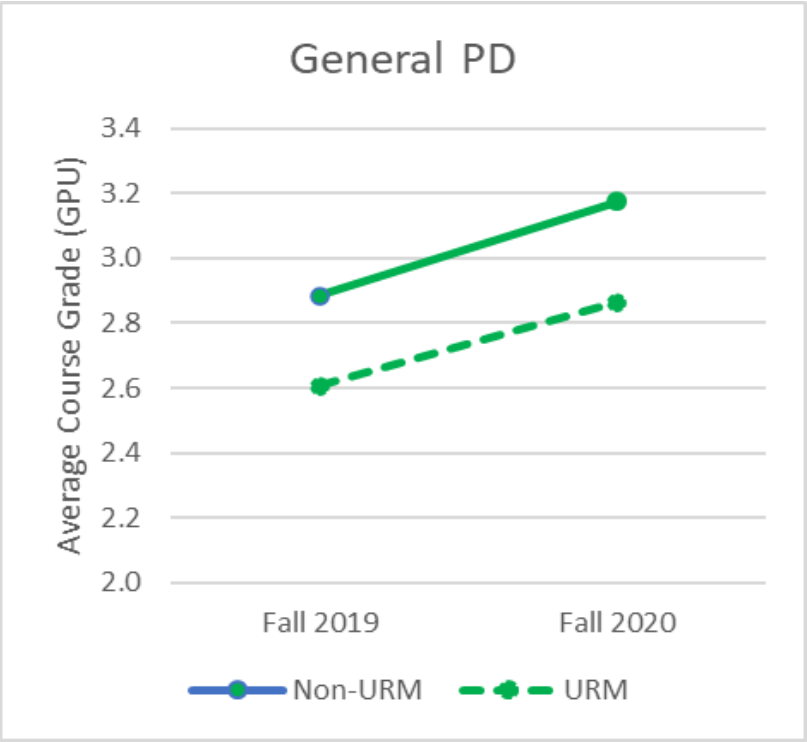
- General PD participants' DFW rate started out lower than those of STEM PD participants and non-participants
- General PD participants' DFW rate decreased the same amount as those of non-participants
- STEM PD participants' DFW rate decreased significantly more than those of non-participants.



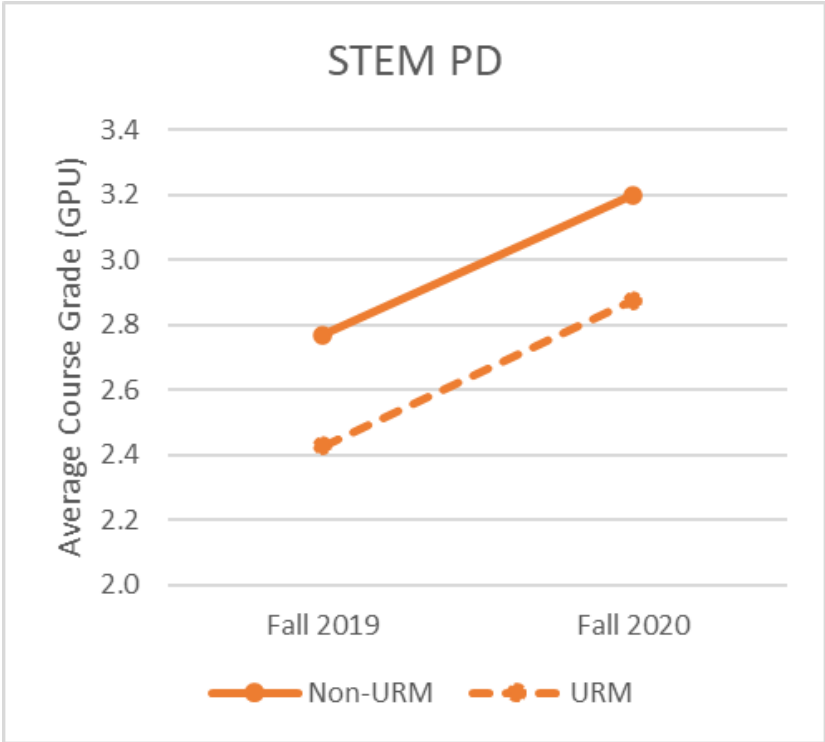
# Neither PD Improved Equity Gap in Course Grade



DID = -0.05



DID = -0.03

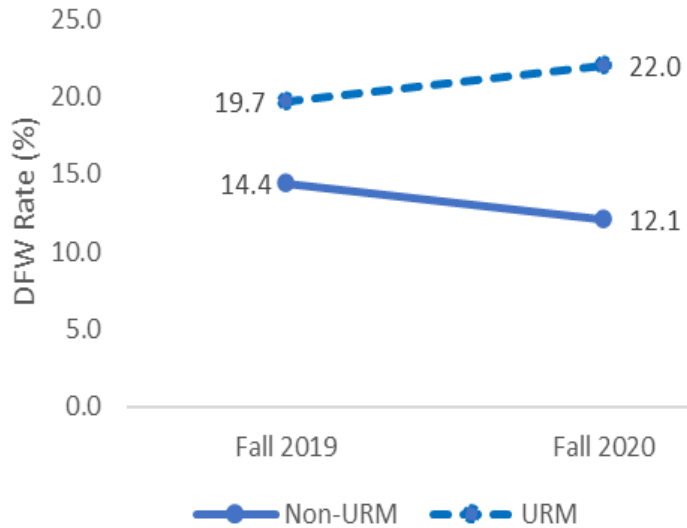


DID = 0.018



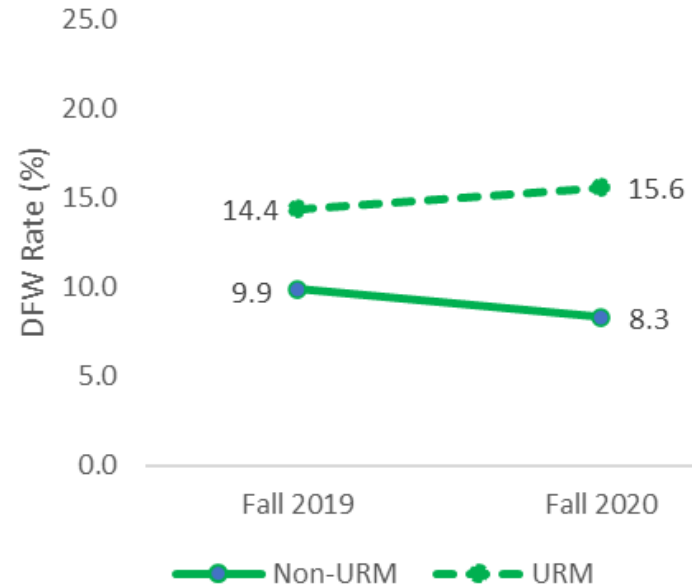
# STEM PD Improved Equity Gap in DFW Rates

### No Treatment



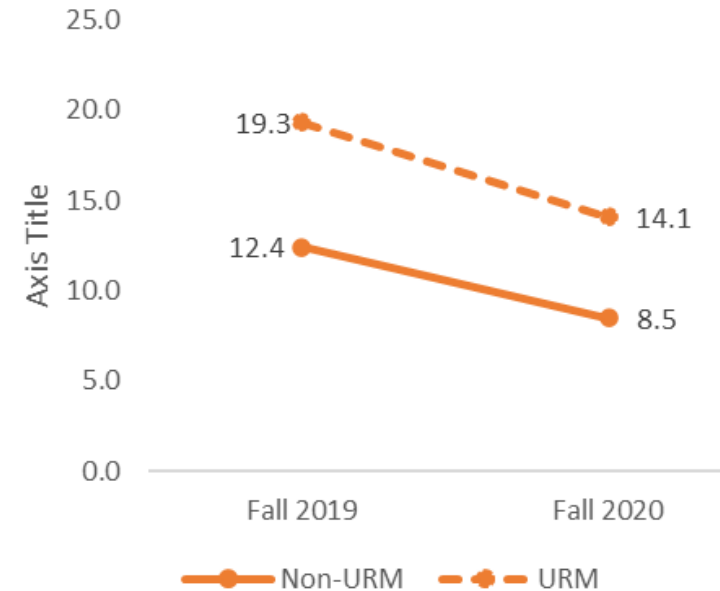
DID = 4.6%

### General PD



DID = 2.8%

### STEM PD



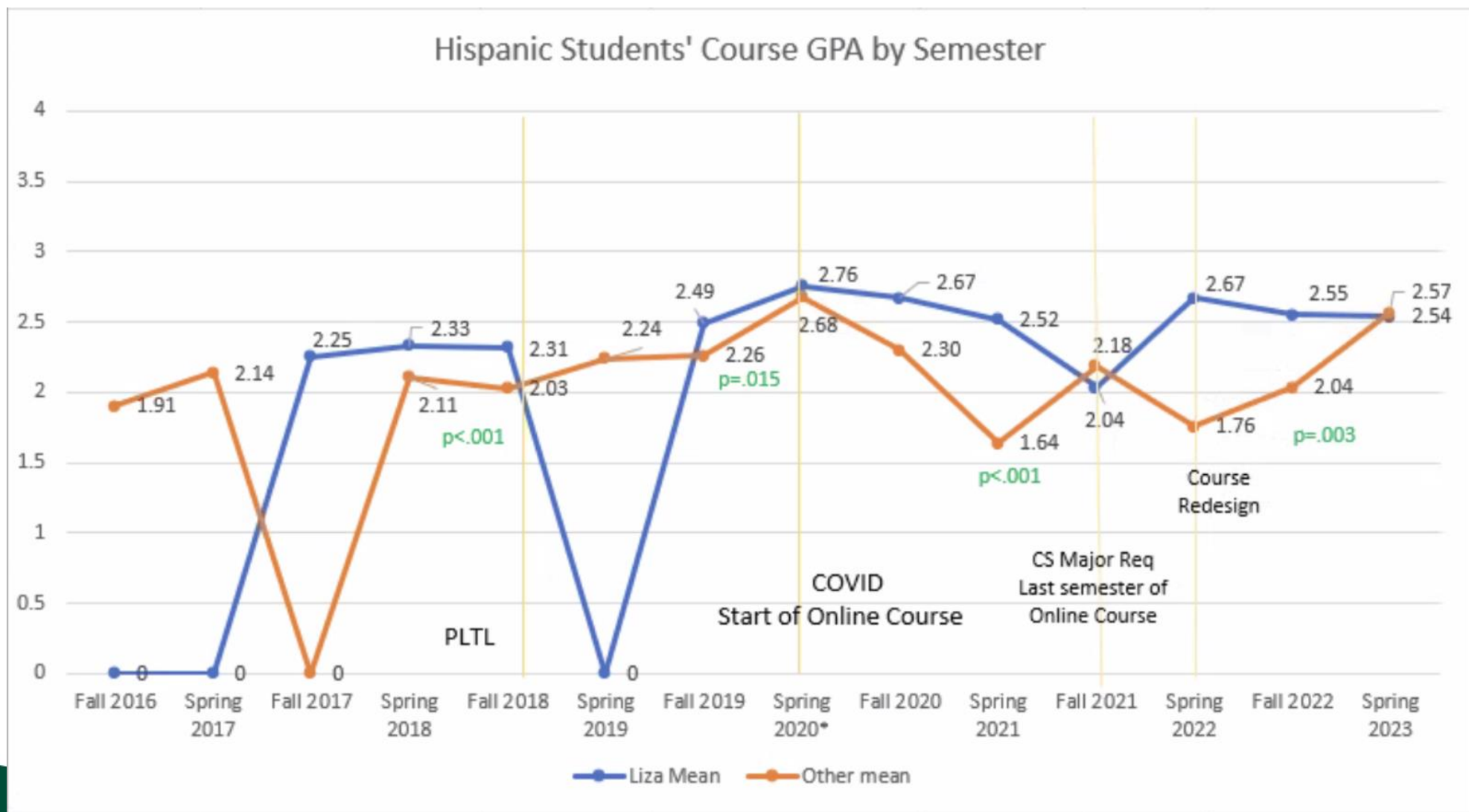
DID = -1.3%

# What Made faculty PD Effective?

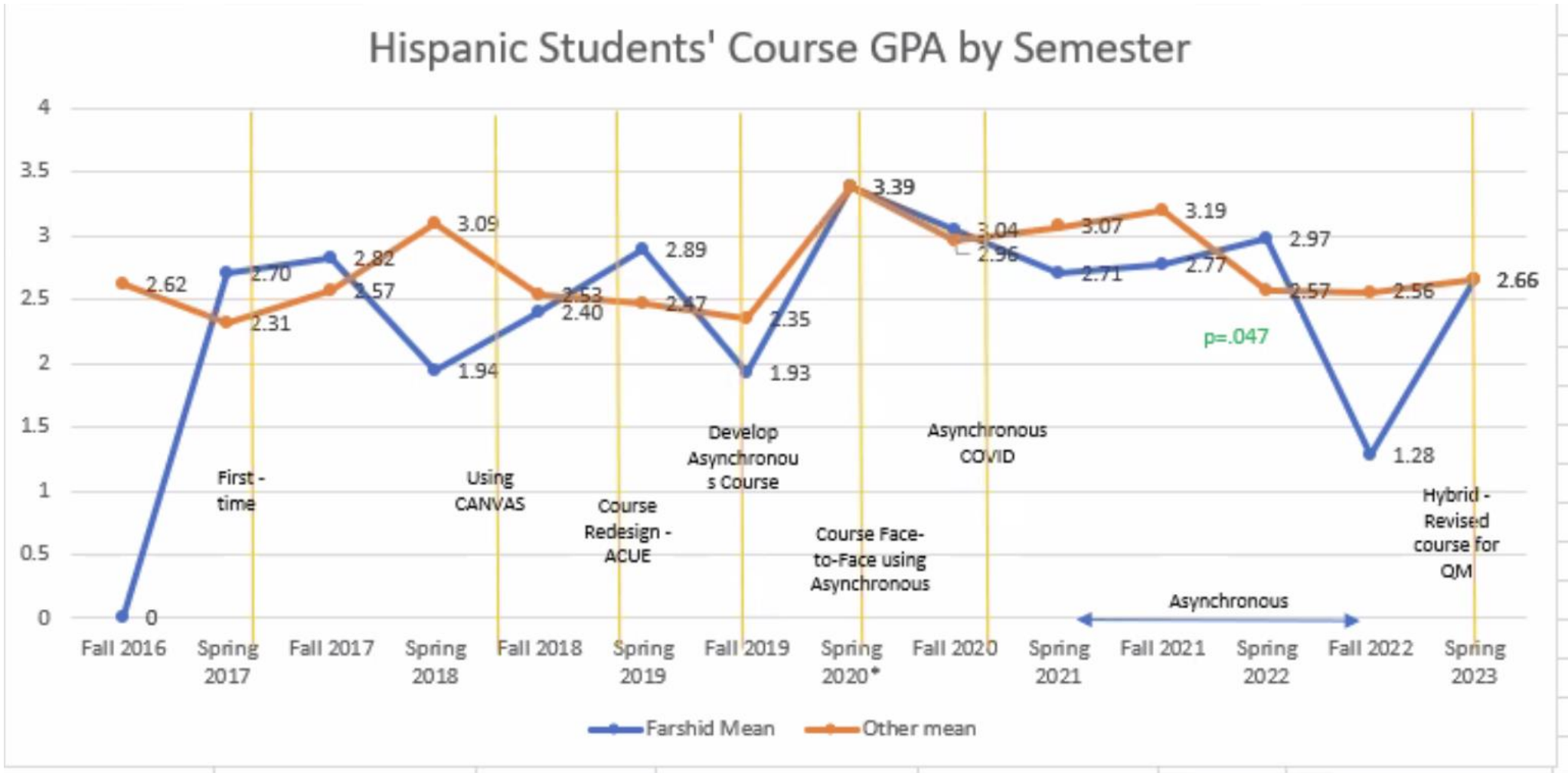
## Effective faculty PD

1. Is discipline specific
2. Implements and models adult learning theory
3. Structures authentic collaboration among faculty
4. Models effective curricular planning and teaching practices
5. Provides coaching and expert support
6. Includes time for intentional reflection
7. Occurs over a sustained duration

# Course Redesign: Evidence of Impact on Hispanic Student Grades Physics 11A



# Course Redesign: Evidence of Impact on Hispanic Student Grades ENGR124





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