Increasing student participation in NSSE: Practical strategies and methodological benefits

2018 CAIR conference
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Outline

- NSSE background
- Survey marketing
- Survey administration
- Logistic analysis
- Principal components analysis
- Conclusions
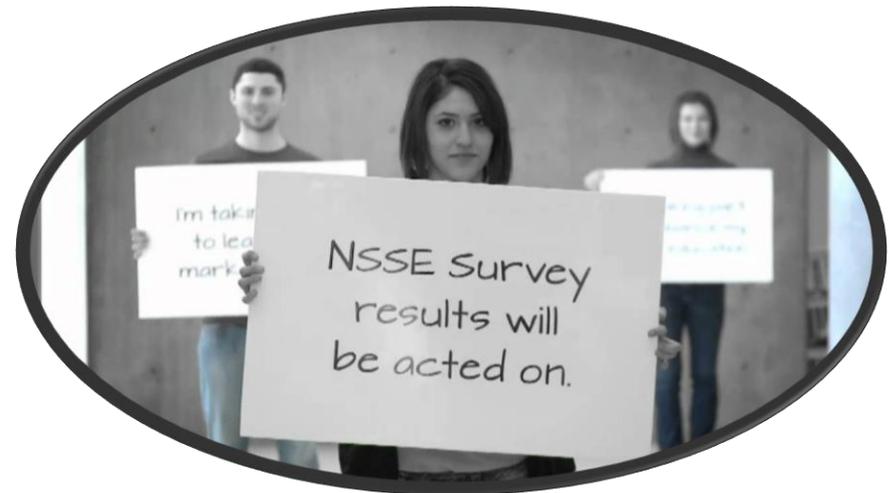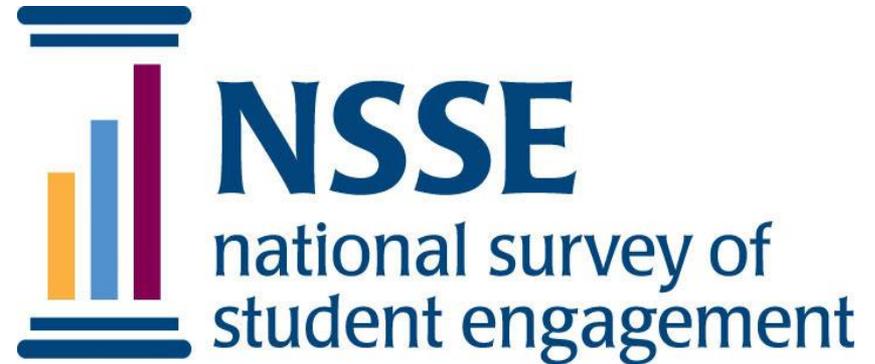
National Survey of Student Engagement

- Purpose

- Importance

- Historical participation

- University benefits

Survey Marketing

- NSSE task force
- YouTube CSUF video
- Social media campaign
- Multi-tiered giveaways
- Portal + 4 email reminders

Campus-Wide Involvement

- CSUF president
- Faculty
- Staff
- Students
- Administrators

NSSE
National Survey of Student Engagement
CALIFORNIA STATE UNIVERSITY, FULLERTON

Dear [Name]:

I encourage you to complete the National Survey of Student Engagement (NSSE). Your input will help us understand how you and your fellow students spend time in and out of the classroom, guiding decisions that will empower the University to better serve and support all of you in achieving your academic goals and life dreams. We want to hear your voice!

The survey is available at:
https://nssesurvey.org/{loginid}/{contact}

In appreciation for participating, students who complete the survey by March 31st will be automatically entered in a random drawing to win:
- iPads
- Disneyland Tickets
- Gift Cards (Amazon, iTunes, etc.)
- Bluetooth Speakers
- CSUF Sweatshirts

Sincerely,
Fram Virjee
President

CALIFORNIA STATE UNIVERSITY FULLERTON

Survey Administration

- Student portal (3,500+)
- 2018 response rate (43%)
- 2018 response rate higher than 2016 & 2014
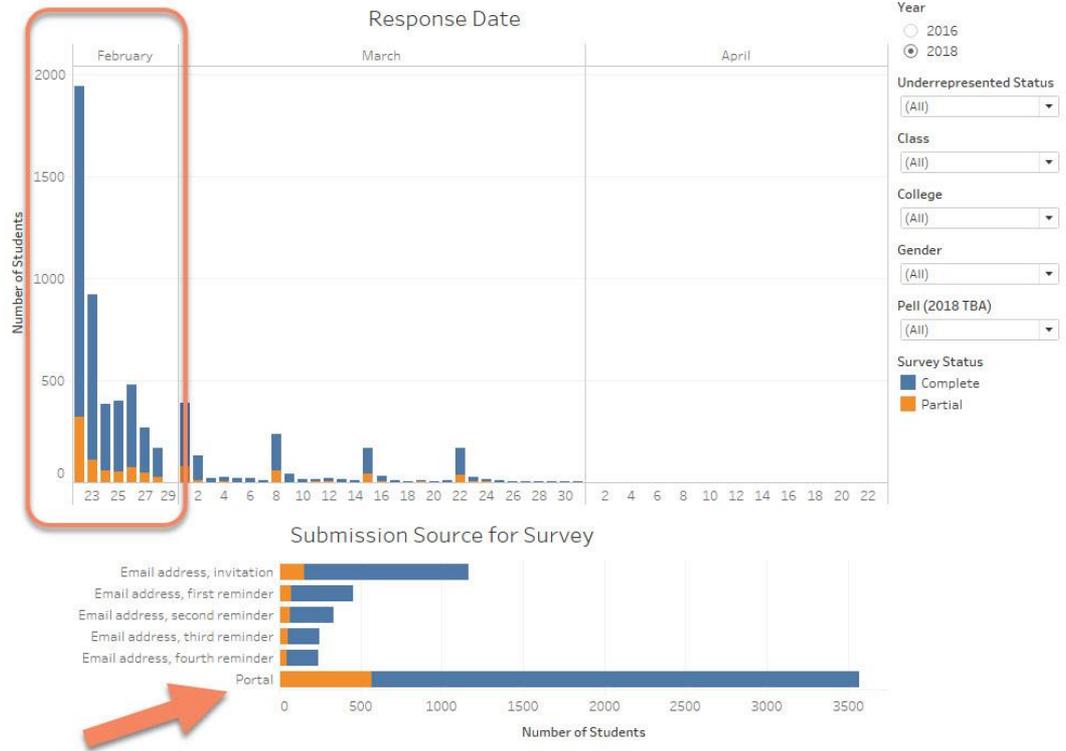
Response Rate Comparison

- Significant increase from 2016

- Response rate similar between freshman vs senior

- Women more likely to participate.

Status	2018			2016		
	Freshman	Senior	Total	Freshman	Senior	Total
Complete	1599	3486	5085	826	1678	2504
Partial	313	648	961	215	519	734
Refusal	73	148	221			
Nothing returned	2446	5370	7816			
Eligible Cohort Size	4431	9652	14083	4583	11405	15988
Response %	**43.20%**	**42.80%**	**42.90%**	**22.70%**	**19.30%**	**20.30%**
Complete %	36.10%	36.10%	36.10%	18.00%	14.70%	15.70%
Partial %	7.10%	6.70%	6.80%	4.70%	4.60%	4.60%
Refusal %	1.60%	1.50%	1.60%			
Nothing returned %	55.20%	55.60%	55.50%			

Respondent Composition Breakdown

- Women are over-represented, particularly among Freshmen (69.3% in sample vs 61.4% in the population)
- COTA, HSS and NSM are slightly over-represented among Freshmen; HHD, HSS, NSM were over-represented among Seniors
- Ethnicity/race was not associated.

		Freshman			Senior		
		Not Responded	Responded	Total	Not Responded	Responded	Total
Gender	Women	55.40%	69.30%	61.40%	46.50%	60.30%	52.40%
	Men	44.60%	30.70%	38.60%	53.50%	39.70%	47.60%
College	COTA	5.90%	7.60%	6.60%	8.50%	7.90%	8.20%
	MCBE	18.10%	15.70%	17.10%	29.00%	25.90%	27.70%
	COMM	5.00%	5.80%	5.30%	9.30%	9.40%	9.30%
	ECS	16.60%	13.40%	15.20%	12.50%	10.10%	11.50%
	HHD	14.80%	11.80%	13.50%	16.40%	20.10%	18.00%
	HSS	16.70%	18.40%	17.40%	16.70%	17.90%	17.20%
	NSM	10.50%	14.50%	12.20%	7.60%	8.70%	8.10%
	OTHER	12.40%	12.90%	12.60%		<0.1%	<0.1%
Race/Ethnicity	Native American	0.10%	0.10%	0.10%	0.20%	0.10%	0.10%
	Black	1.70%	1.50%	1.60%	1.90%	1.60%	1.80%
	Hispanic	50.80%	50.40%	50.60%	38.70%	41.00%	39.70%
	Asian	20.60%	23.60%	21.90%	22.50%	22.20%	22.40%
	White	13.00%	12.20%	12.70%	21.90%	20.60%	21.30%
	Unknown	2.20%	2.30%	2.30%	4.20%	4.10%	4.10%
	International	7.60%	5.70%	6.80%	5.90%	5.70%	5.80%
	Pacific Islander	0.10%	0.20%	0.10%	0.20%	0.20%	0.20%
	More than one	3.90%	4.00%	3.90%	4.50%	4.50%	4.50%

Logistic Analysis

- Freshman/senior females more likely to participate

- Higher GPA students more likely to participate

- No associations for seniors by colleges

- Seniors attempting more credits more likely to participate

- Higher performing freshman Hispanic more likely to participate model 2

Variables	Freshman Model 1 OR	Freshman Model 1 Sig.	Freshman Model 2 OR	Freshman Model 2 Sig.	Seniors Model 1 OR	Seniors Model 1 Sig.	Seniors Model 2 OR	Seniors Model 2 Sig.
Men	0.54	**0.00**	0.56	**0.00**	0.58	**0.00**	0.59	**0.00**
COTA	1.23	0.14	1.07	0.63	0.88	0.15	0.85	0.08
CBE	0.90	0.33	0.87	0.21	0.95	0.44	1.03	0.65
COMM	1.04	0.82	0.93	0.64	0.95	0.51	0.95	0.56
ECS	1.03	0.78	1.14	0.27	0.99	0.92	1.00	0.96
HHD	0.70	**0.00**	0.67	**0.00**	1.11	0.14	1.07	0.32
NSM	1.29	**0.03**	1.38	**0.01**	1.12	0.20	1.18	0.06
Other	0.97	0.78	0.92	0.48				
American Indian	1.39	0.74	1.60	0.65	0.37	0.13	0.36	0.12
Black	0.92	0.74	1.07	0.81	0.86	0.37	0.94	0.71
Hispanic	1.07	0.49	1.22	**0.05**	1.06	0.34	1.10	0.09
Asian	1.31	**0.01**	1.31	**0.02**	1.04	0.56	1.05	0.42
Unknown	1.17	0.48	1.23	0.35	1.11	0.34	1.14	0.24
International	0.91	0.54	1.11	0.52	1.01	0.89	1.03	0.76
More than one	1.13	0.51	1.17	0.38	1.02	0.86	1.01	0.94
Fall GPA			1.40	**0.00**			1.26	**0.00**
Fall attempted Units			1.02	0.22			1.03	**0.00**
Constant	0.88	0.27	0.24	**0.00**	0.94	0.34	0.33	**0.00**

Notes. DV: 2018 NSSE student participation in survey (1) or not (0)

P values < .05 in bold; OR = odds ratios.

Analysis conducted using logistic regression

Principal Component Analysis

- Compare CSUF component structure with NSSE component structure

- NSSE senior population & CSUF senior population

- Full completions only of CSUF senior responses (n = 3,478)

- PCA; Oblimin with Kaiser Normalization
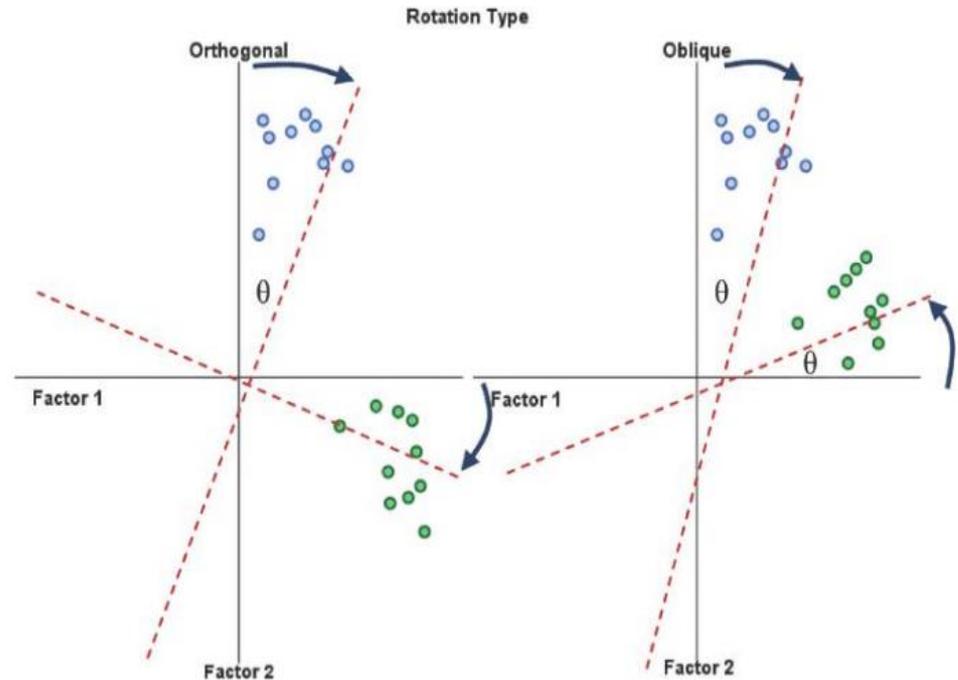
Credit: Andy Field

PCA vs. Factor Analysis

- PCA uses linear combination of weighted Y variables that contribute to component

- Factor analysis uses a latent factor that causes the response on Y variables
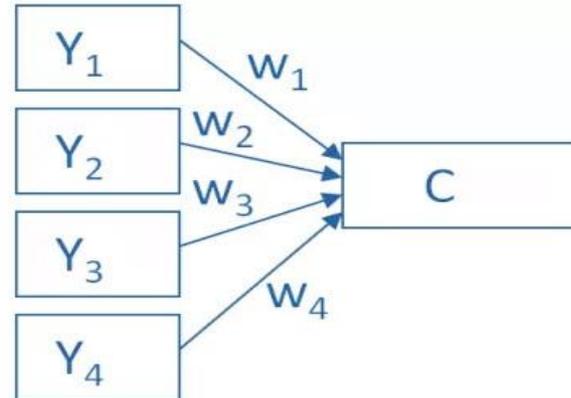
This model can be set up as a simple equation:

$$C = w_1(Y_1) + w_2(Y_2) + w_3(Y_3) + w_4(Y_4)$$
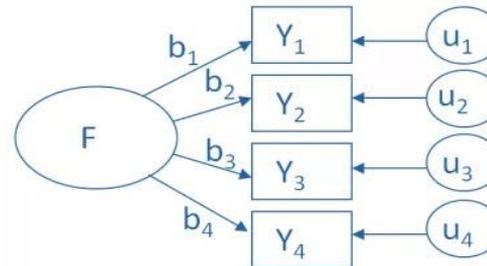
You can literally interpret this model as a set of regression equations:

$$Y_1 = b_1{}^*F + u_1$$
$$Y_2 = b_2{}^*F + u_2$$
$$Y_3 = b_3{}^*F + u_3$$
$$Y_4 = b_4{}^*F + u_4$$

Credit: The Analysis Factor, Karen Grace-Martin

Component Breakdown

- Kaiser's criterion
- Each component has eigen value
- Percentage of variance
- Cumulative percentage of variance

Total Variance Explained			
Component	Eigenvalues	% of Variance	Cumulative %
1	12.466	21.494	21.494
2	4.100	7.070	28.563
3	2.724	4.696	33.260
4	2.555	4.406	37.665
5	2.415	4.164	41.829
6	2.131	3.675	45.503
7	1.970	3.396	48.900
8	1.705	2.940	51.839
9	1.654	2.851	54.691
10	1.383	2.384	57.075
11	1.250	2.155	59.231
12	1.117	1.926	61.156
13	1.089	1.878	63.034

Extraction Method: Principal Component Analysis.

Scree Plot

- Component Extraction
- Plot of eigenvalue (Y-axis) against the component (X-axis)
- How to determine component to retain?
- Point of inflection
- "Typically" retain components with eigenvalues greater than 1.
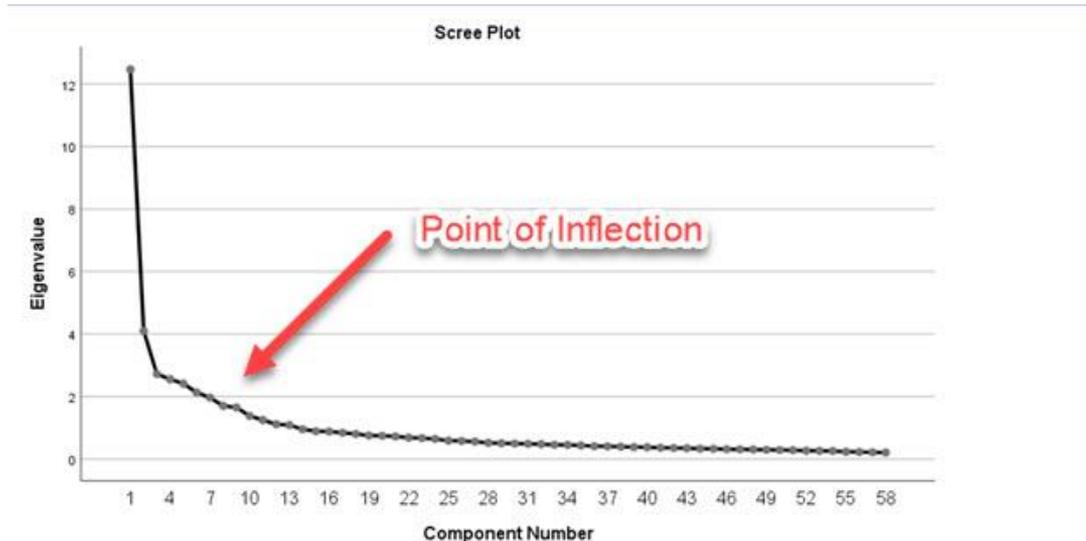
Reflective Learning

- Component 1
- Combined ideas
- Connected learning
- No loading for CSUF variables
- NSSE items cross-loaded on higher order learning

Item Difference
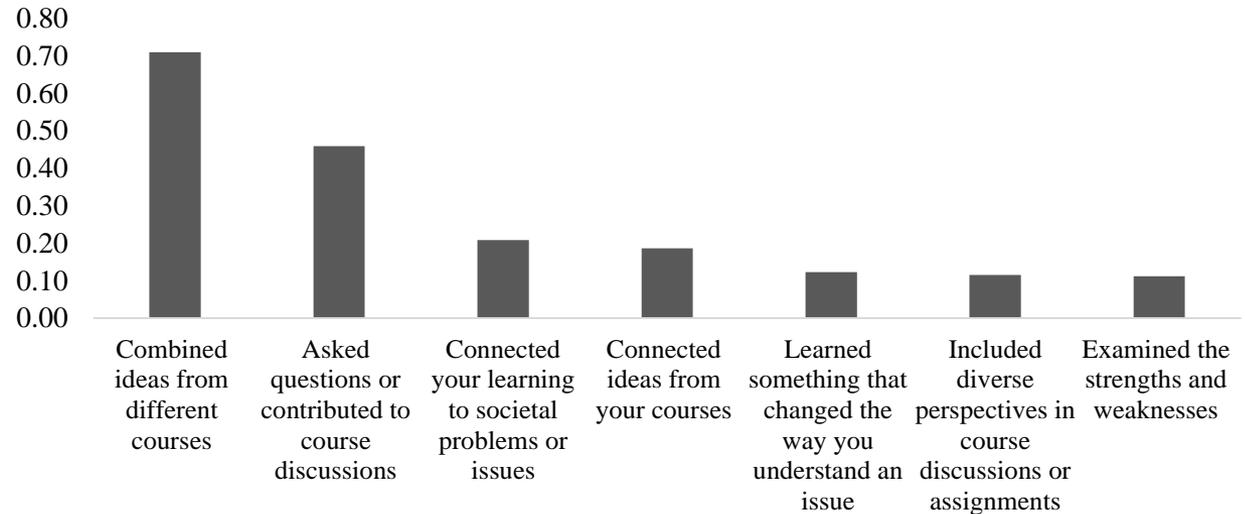
Result	Questions	CSUF	NSSE	Item Difference
No load CSUF	Combined ideas from different courses		0.71	0.71
No load CSUF	Asked questions or contributed to course discussions		0.46	0.46
Load	Connected your learning to societal problems or issues	0.62	0.83	0.21
Load	Connected ideas from your courses	0.63	0.81	0.19
Load	Learned something that changed the way you understand an issue	0.66	0.78	0.12
Load	Included diverse perspectives in course discussions or assignments	0.70	0.82	0.12
Load	Examined the strengths and weaknesses	0.73	0.84	0.11
NSSE cross	Connected ideas from your courses		0.49	
NSSE cross	Learned something that changed the way your understanding		0.47	

Cross loaded with higher-order learning

Supportive Environment

- Component 2
- Support academically
- Overall well-being
- NSSE items cross-loaded on effective teaching
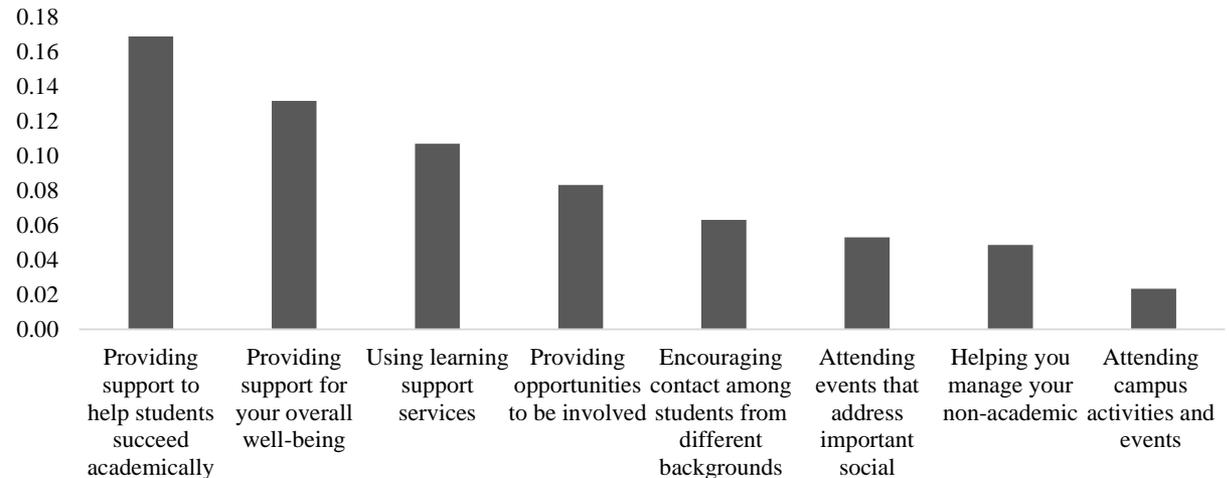
Item Difference

Result	Questions	CSUF	NSSE	Item Difference
Load	Providing support to help students succeed academically	0.56	0.733	0.17
Load	Providing support for your overall well-being	0.71	0.838	0.13
Load	Using learning support services	0.62	0.725	0.11
Load	Providing opportunities to be involved	0.76	0.839	0.08
Load	Encouraging contact among students from different backgrounds	0.68	0.746	0.06
Load	Attending events that address important social	0.77	0.823	0.05
Load	Helping you manage your non-academic	0.70	0.752	0.05
Load	Attending campus activities and events	0.77	0.798	0.02
NSSE cross	Institutional emphasis: Providing opportunities to be involved socially		0.496	

Cross loaded with effective teaching

Discussions with Others

- Component 3
- Discuss political views
- Discuss economic background
- No NSSE cross-loadings
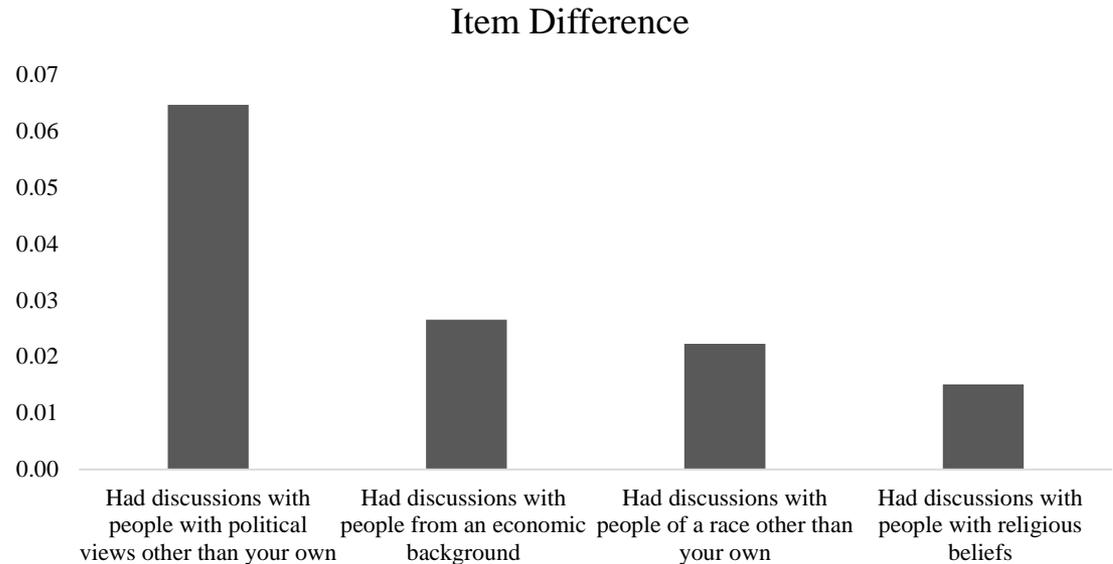
Item Difference

Result	Questions	CSUF	NSSE	Item Difference
Load	Had discussions with people with political views other than your own	0.82	0.886	0.06
Load	Had discussions with people from an economic background	0.89	0.917	0.03
Load	Had discussions with people of a race other than your own	0.86	0.886	0.02
Load	Had discussions with people with religious beliefs	0.91	0.899	0.02

No cross-loadings

Student-Faculty Interaction

- Component 4
- Career plans
- Academic performance
- No cross-loadings
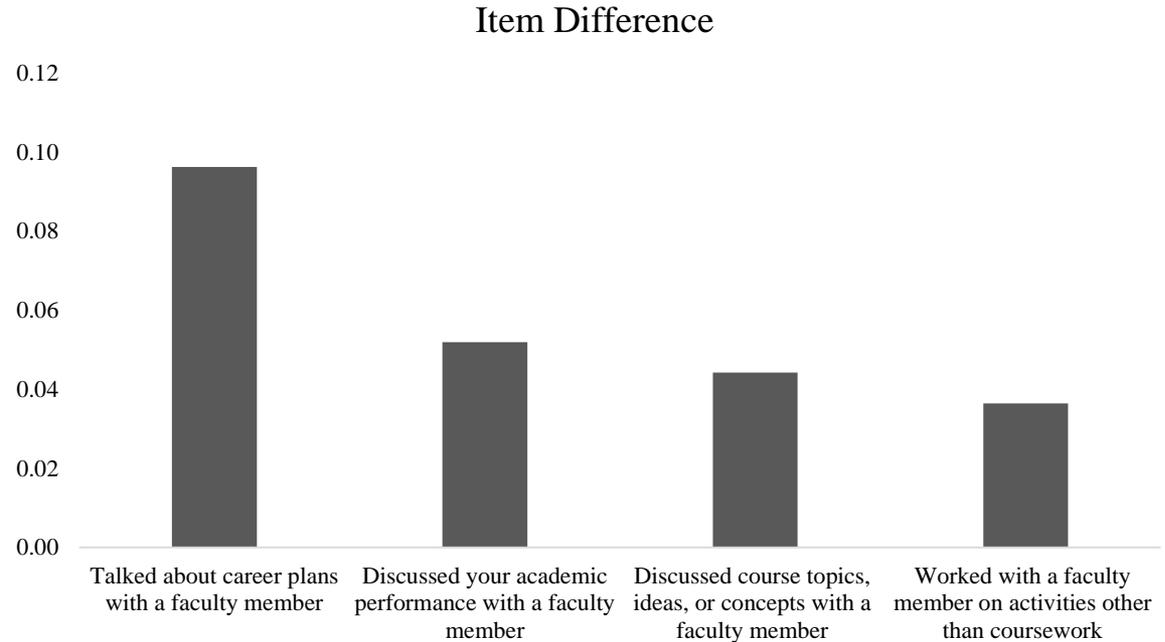
Item Difference

Result	Questions	CSUF	NSSE	Item Difference
Load	Talked about career plans with a faculty member	0.74	0.833	0.10
Load	Discussed your academic performance with a faculty member	0.75	0.80	0.05
Load	Discussed course topics, ideas, or concepts with a faculty member	0.83	0.876	0.04
Load	Worked with a faculty member on activities other than coursework	0.80	0.839	0.04

No cross-loadings

Quality of Interactions

- Component 5
- Interactions w/ advisors
- Interactions w/ admin.
- NSSE items cross-loaded on effective teaching
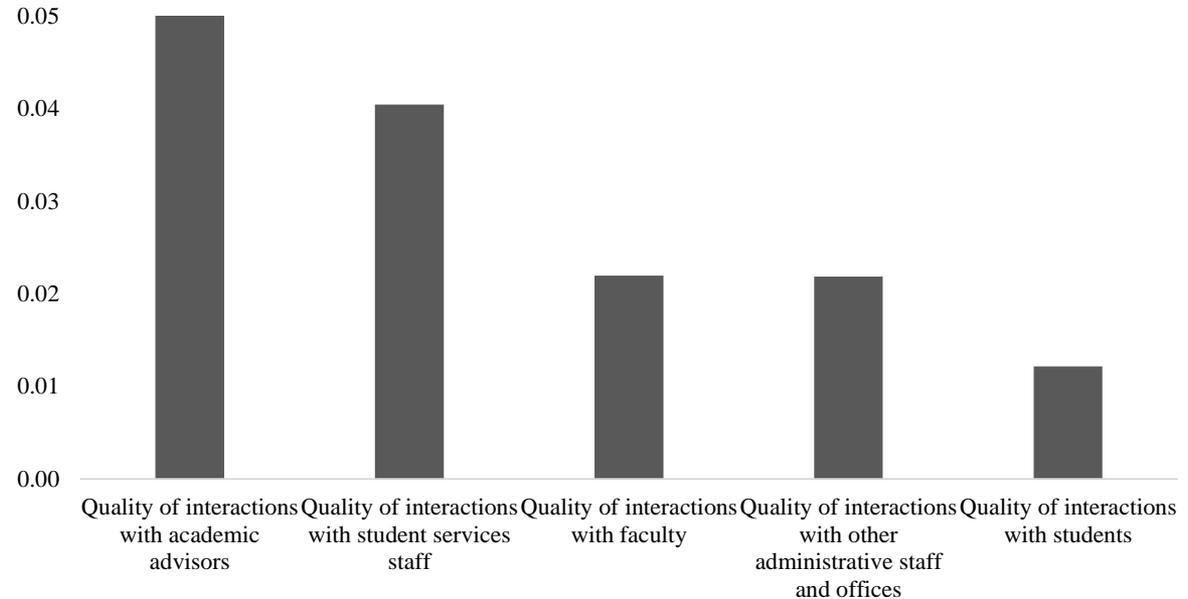
Item Difference

Result	Questions	CSUF	NSSE	Item Difference
Load	Quality of interactions with academic advisors	0.79	0.733	0.06
Load	Quality of interactions with student services staff	0.90	0.859	0.04
Load	Quality of interactions with faculty	0.72	0.746	0.02
Load	Quality of interactions with other administrative staff and offices	0.87	0.852	0.02
Load	Quality of interactions with students	0.63	0.622	0.01
NSSE cross	Quality of interactions with student services staff		0.543	

Cross with effective teaching

Reliability

- Consistency measure
- Highest - discussion
- Lowest – learning
- CSUF more reliable for quality of interactions

Reliability Statistics
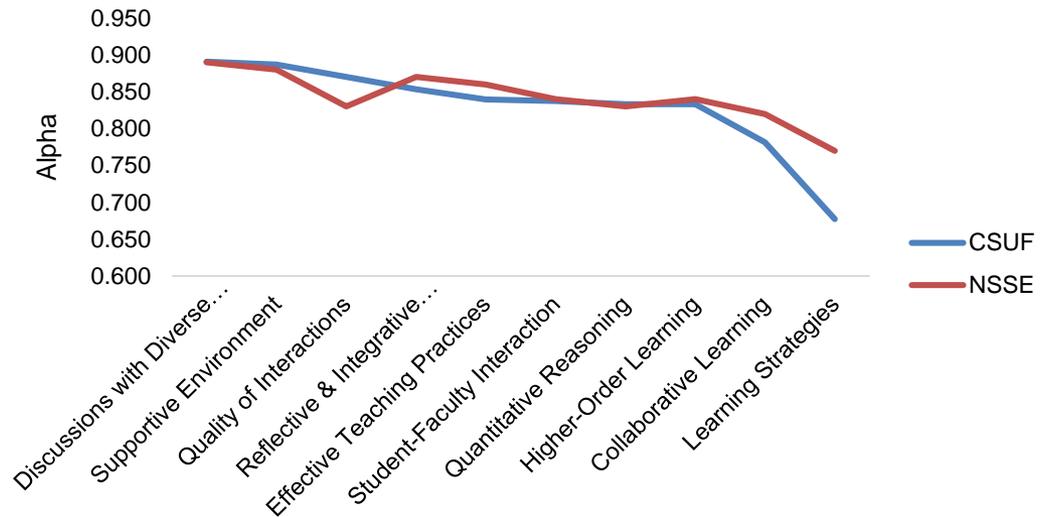
Component	CSUF	NSSE
Discussions with Diverse Others	0.891	0.89
Supportive Environment	0.887	0.88
Quality of Interactions	0.870	0.83
Reflective & Integrative Learning	0.853	0.87
Effective Teaching Practices	0.840	0.86
Student-Faculty Interaction	0.837	0.84
Quantitative Reasoning	0.833	0.83
Higher-Order Learning	0.833	0.84
Collaborative Learning	0.782	0.82
Learning Strategies	0.677	0.77

NSSE Dashboard

- 10 Engagement Indicators i.e., components
- Filter by comparison group
- Filter by year
- Live demo
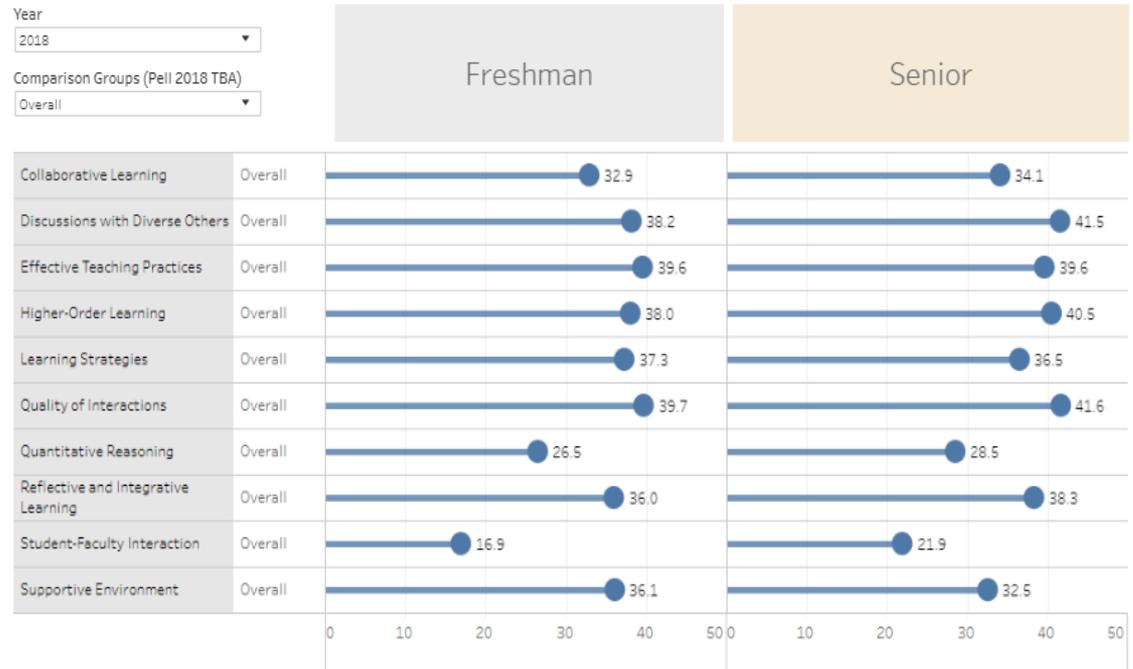
Component Summary

- PCA practical implications
- CSUF structure ≈ NSSE structure
- Only 2 major item differences for reflective learning
- Component cross loadings and no loadings
- Mostly similar CSUF and NSSE component structures
- Use scale items accordingly for unit surveys e.g,. faculty vs. students affairs

Conclusions

- Campus-wide involvement (physical & virtual presence)
- Use of portal wall in collaboration with IT
- Payoff in response rate
- Better understanding of participation for students allowed more detailed analysis beyond typical trends
- PCA is more valuable with higher response rate
- Disaggregation of data to inform practice i.e., curricular and co-curricular

Acknowledgements

- CSUF NSSE task force

Thank You

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THANK YOU!