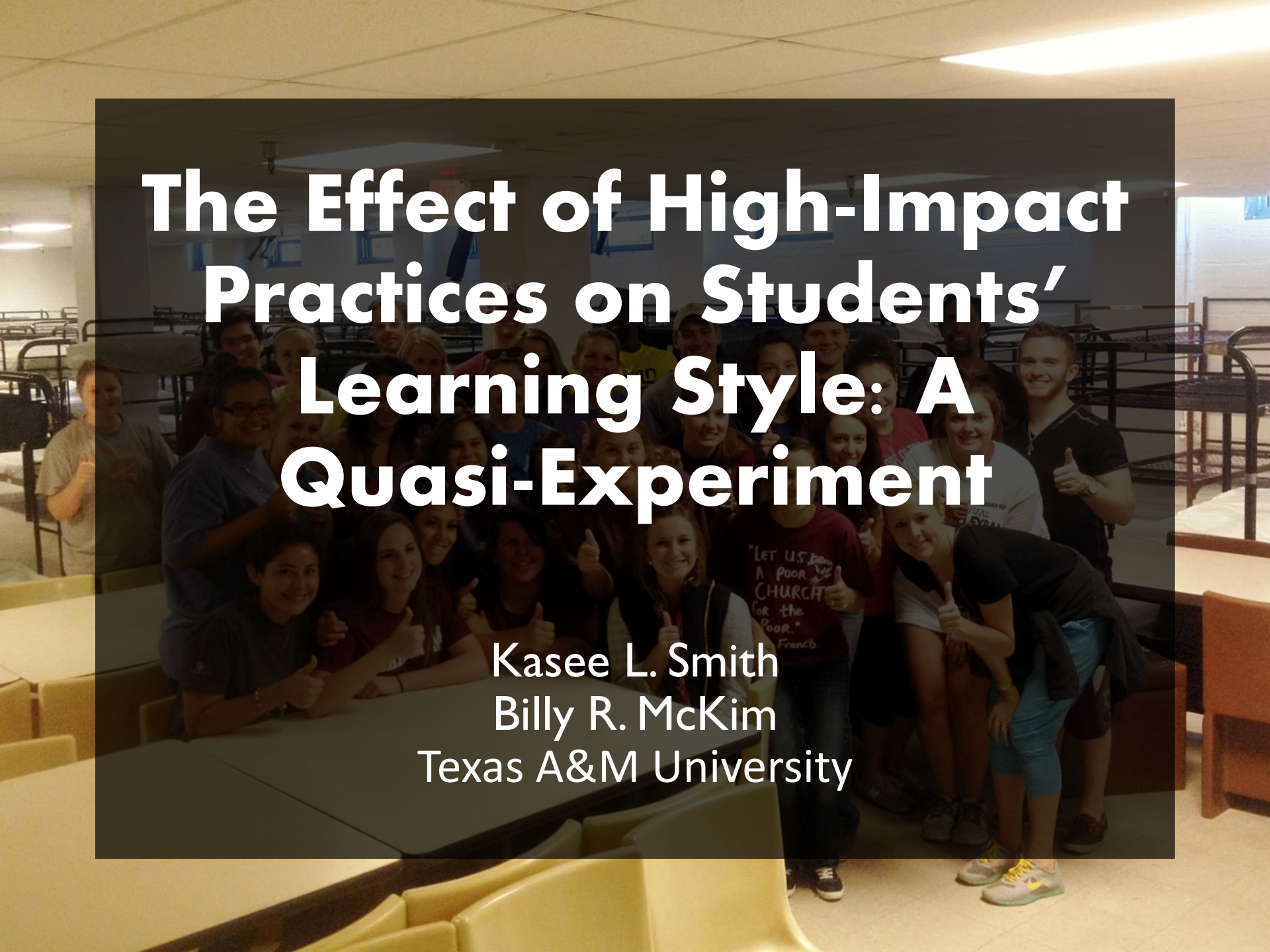

The Effect of High-Impact Practices on Students' Learning Style: A Quasi-Experiment

Kasee L. Smith
Billy R. McKim
Texas A&M University

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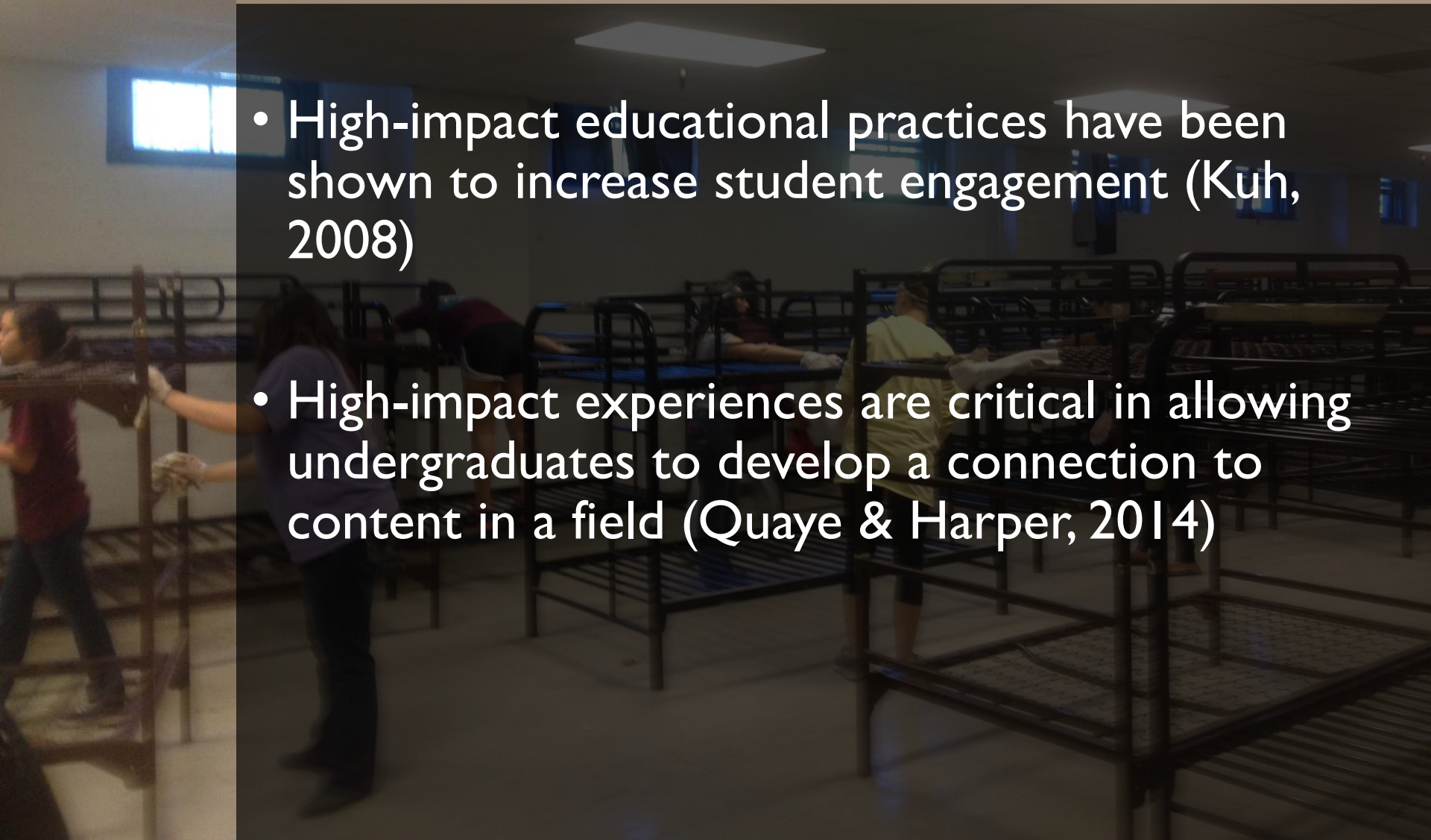
Introduction



- High-impact educational practices have been shown to increase student engagement (Kuh, 2008)

- High-impact experiences are critical in allowing undergraduates to develop a connection to content in a field (Quaye & Harper, 2014)

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Literature & Framework

- Kuh (2008) outlined the characteristics of high-impact educational practices

- High-impact practices can have huge impacts on student learning, engagement, and motivation (Kuh & O'Donnell, 2013)

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Literature and Framework

- Many of the HIE practices can be tied to experiential learning theory (Kolb, 1984)
- Kolb (1984) outlined the factors of the experiential learning cycle
- Learning style can be altered by intervening environmental factors (Kolb & Kolb, 2005)

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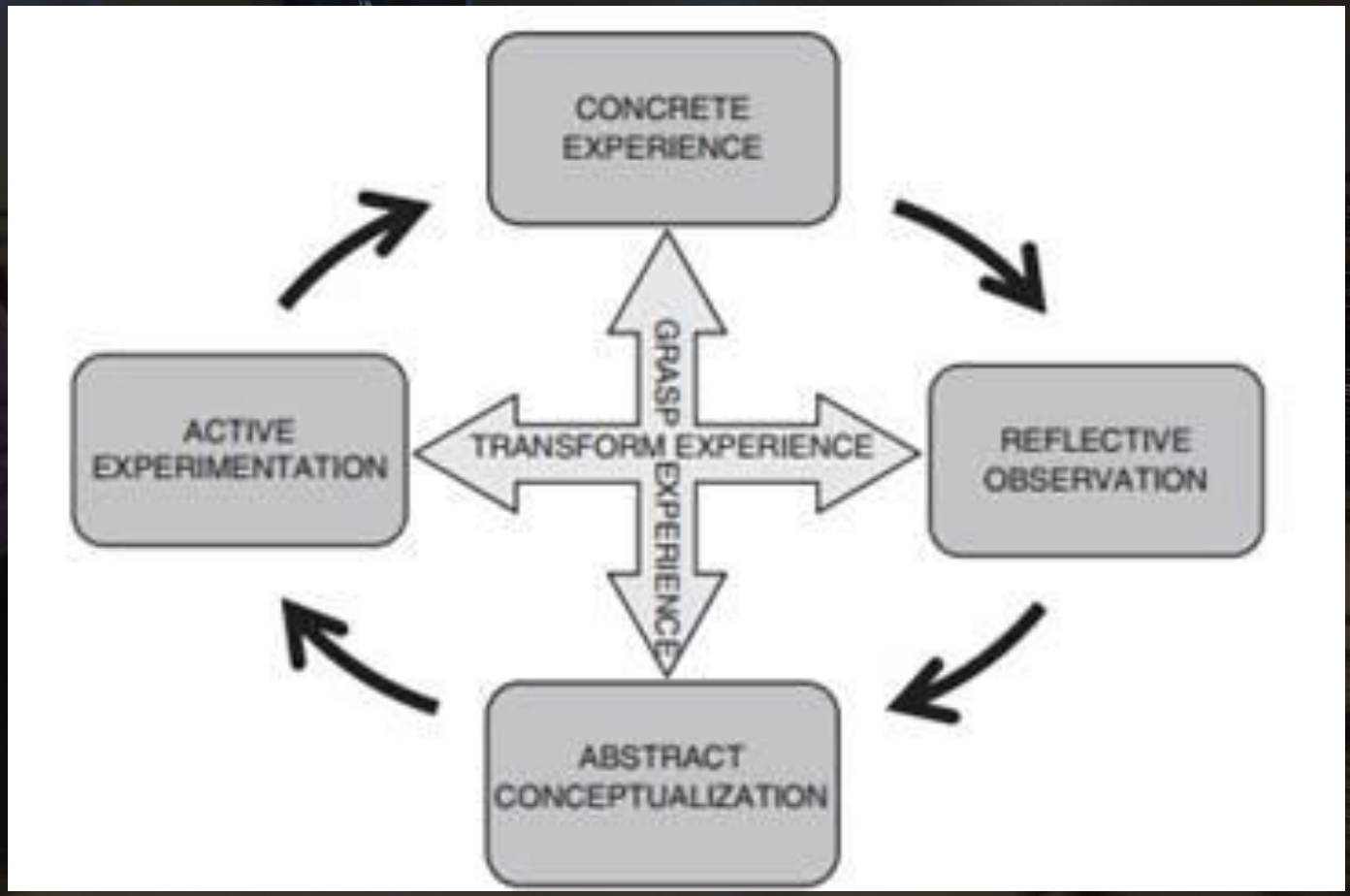
Literature and Framework

- Kolb's (2009) model for experiential learning



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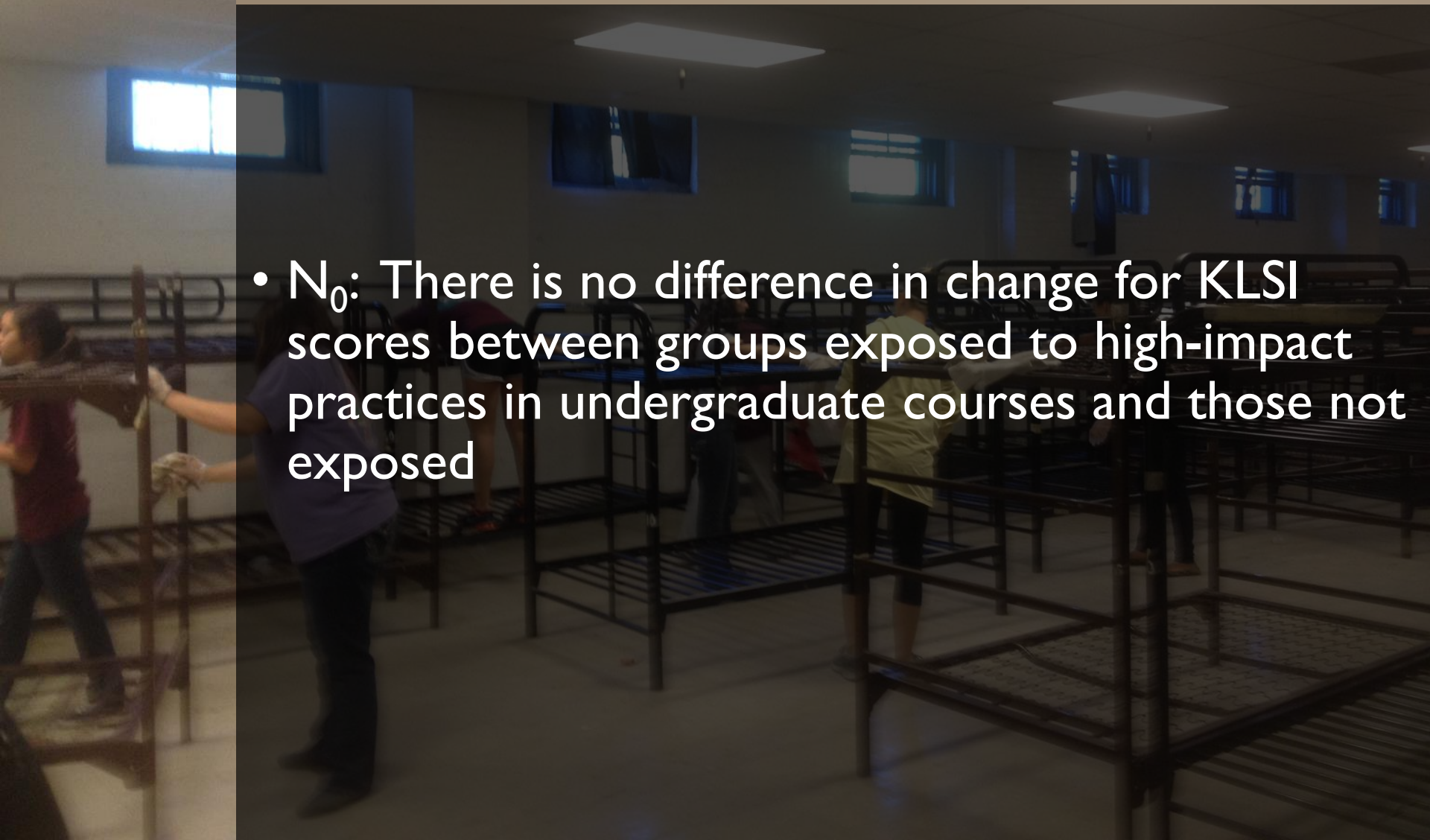
Methods



- N_0: There is no difference in change for KLSI scores between groups exposed to high-impact practices in undergraduate courses and those not exposed

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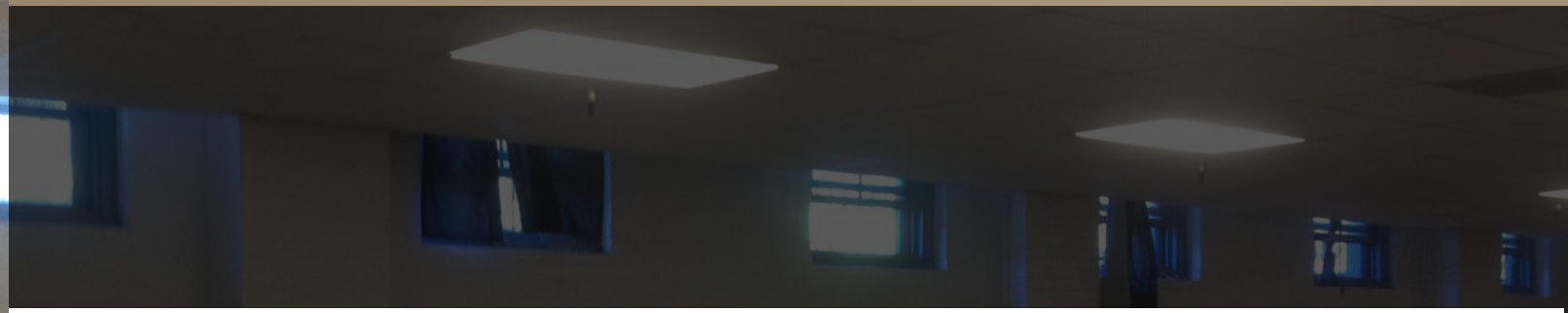
Methods



Pretest-Posttest Quasi-Experimental Design (Shaddish, Cook, & Campbell, 2002)

Group	Pretest	Treatment	Posttest
C_1: Traditional Instruction	O_1		O_2
T_1: HIE Course	O_1	X	O_2

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Methods

- Groups
  - C_1: Intact traditional lecture-based courses
    - Summer 2014 Agricultural Leadership Course
    - Fall 2014 Agricultural Education Course
  - T_1: Course purposively designed with High-Impact Practices
    - Fall 2014 Study Away Course
    - Fall 2014 Student Teaching Course

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Methods

High Impact Practice (Kuh, 2008)	Study Away Course	Student Teaching Course
First-Year Seminars and Experiences		
Common Intellectual Experiences	X	X
Learning Communities	X	X
Writing-Intensive Courses	X	X
Collaborative Assignments	X	
Undergraduate Research	X	
Diversity/Global Learning	X	
Service Learning/Community Based	X	X
Internships		X
Capstone Courses and Projects		X

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Instrumentation

- Kolb's Learning Style Inventory (KLSI) version 3.2
- Places students into one of nine learning styles based on their scores in 4 learning modes
- Internal reliability for the four learning modes has been calculated at $\alpha = 0.77$ to $\alpha = 0.84$
  - Post hoc reliability for our study ranged from $\alpha = 0.81$ to $\alpha = 0.83$
- Test retest reliability has been calculated above $\kappa = 0.90$


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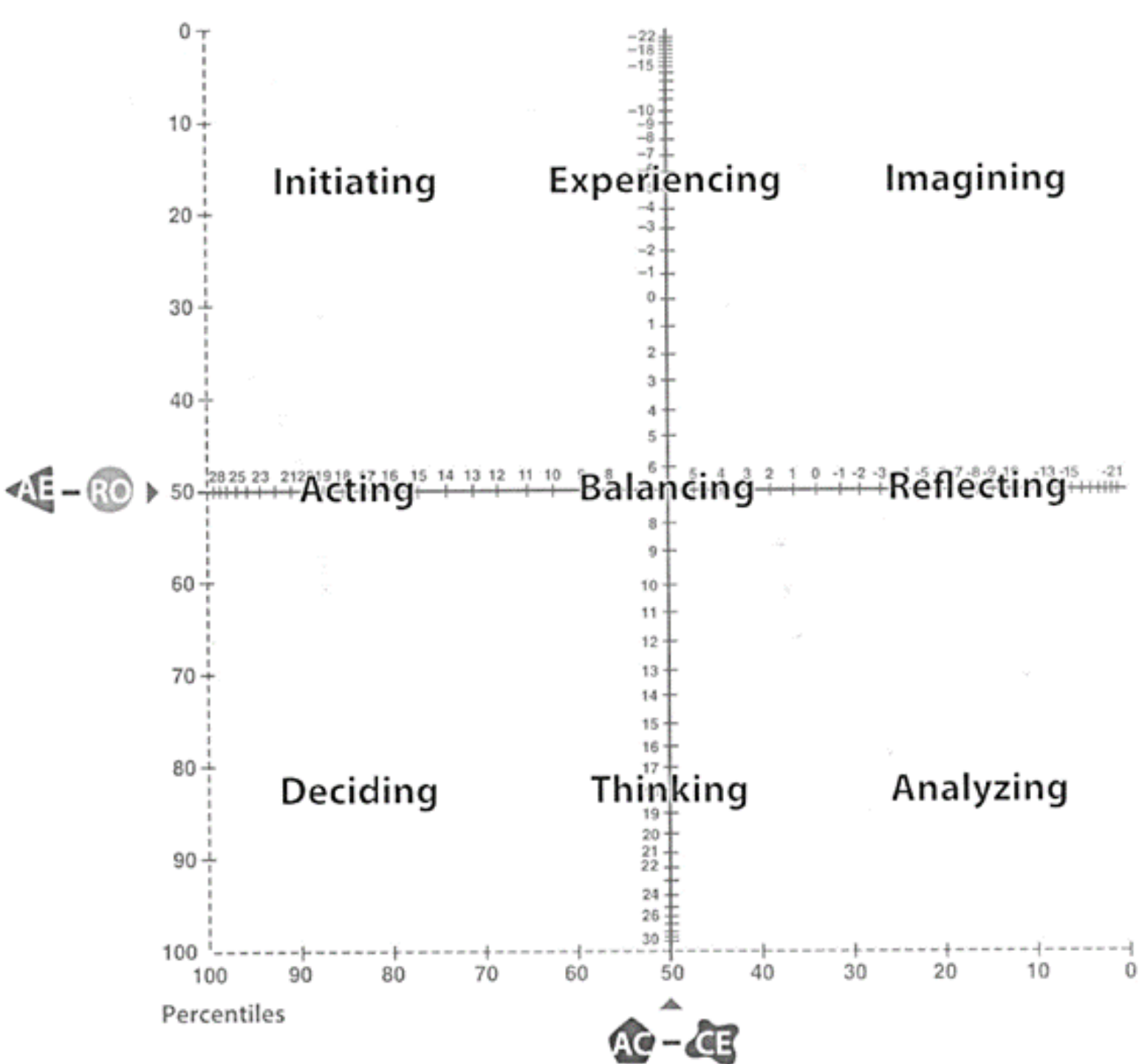
Initiating
Experiencing
Imagining
Acting
Balancing
Reflecting
Deciding
Thinking
Analyzing
AE – RO
AC – CE
Percentiles
0
10
20
30
40
50
60
70
80
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100
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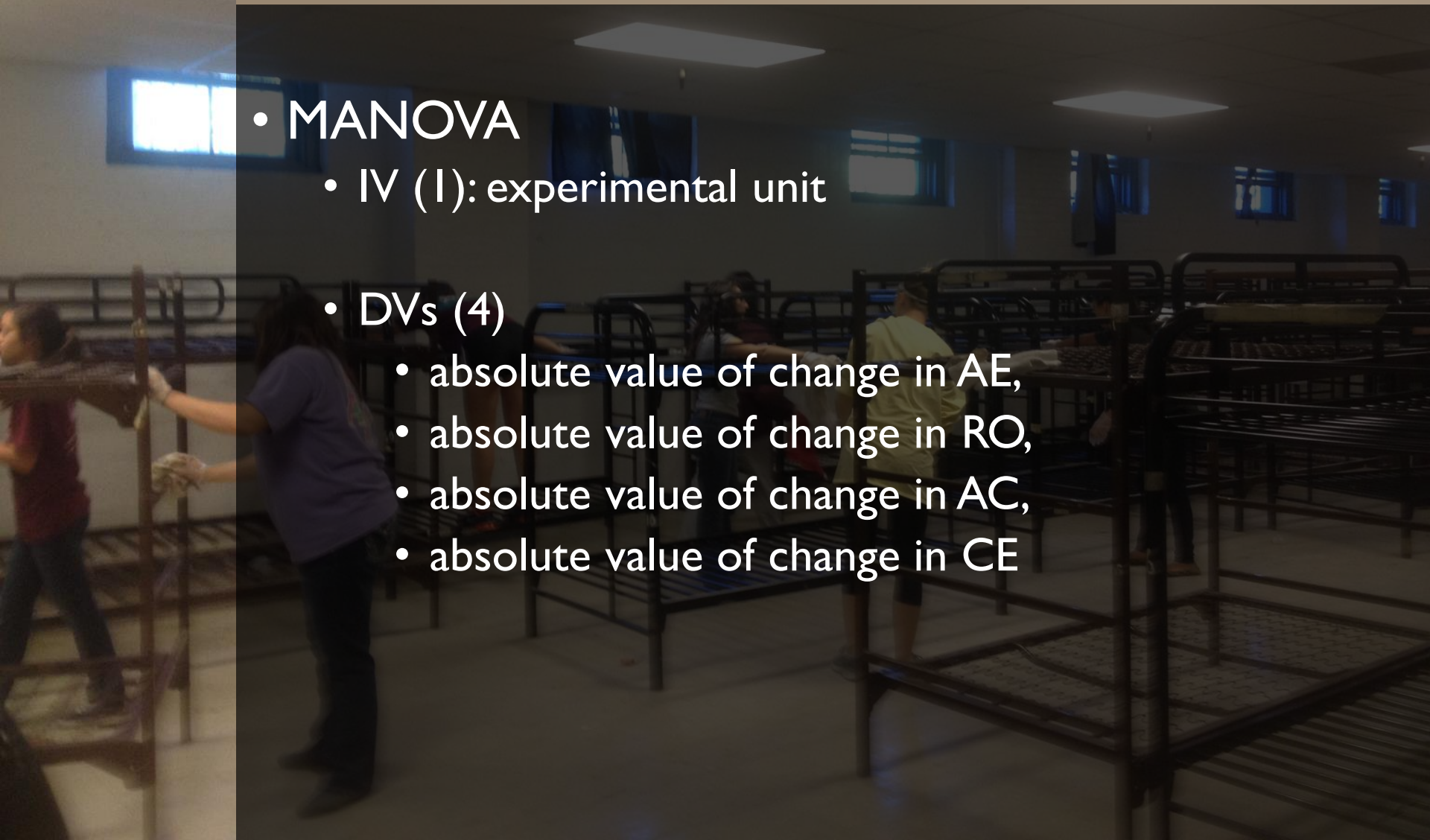
Data Analysis



- MANOVA
  - IV (1): experimental unit
  - DVs (4)
    - absolute value of change in AE,
    - absolute value of change in RO,
    - absolute value of change in AC,
    - absolute value of change in CE

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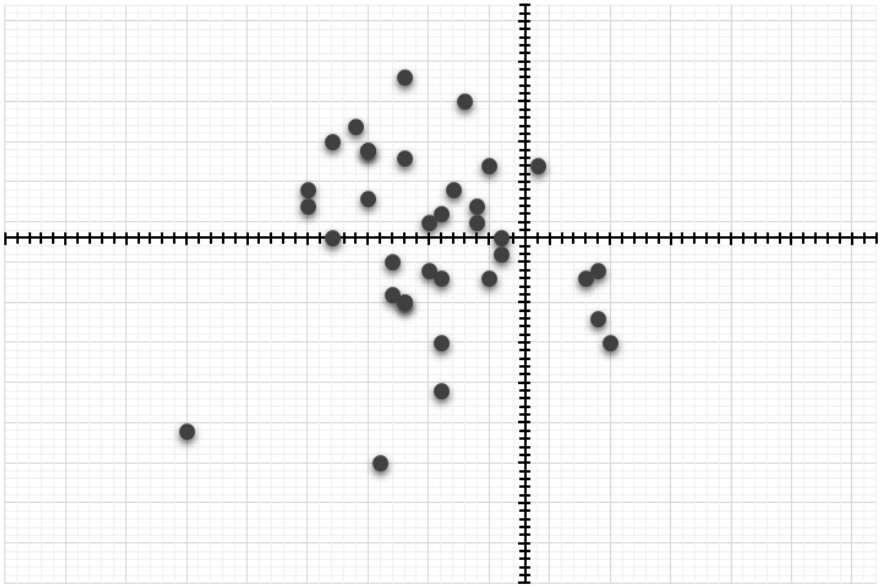
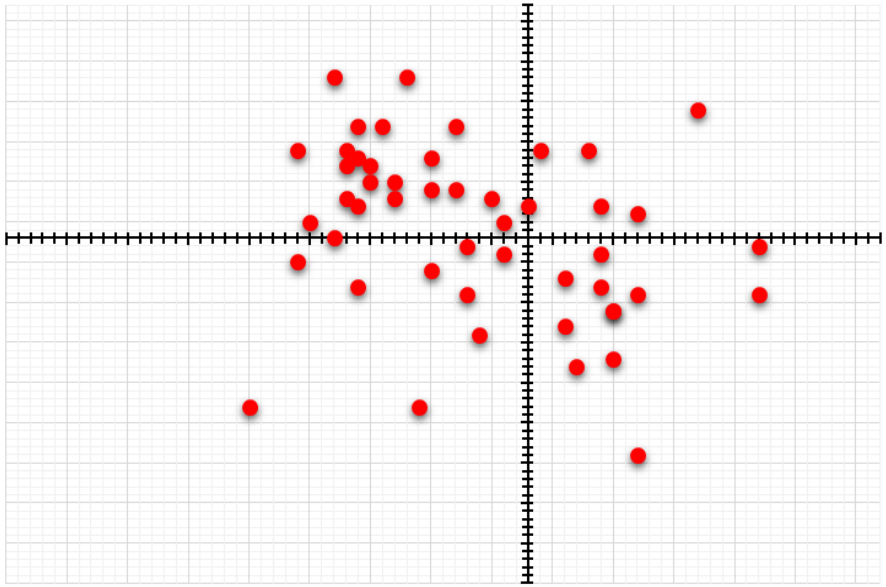
Results

- Beginning of Semester

Control Group (*n* = 35) Beginning KLSI Scores (C_1 O_1)



HIE Group (*n* = 49) Beginning KLSI Scores (T_1 O_1)



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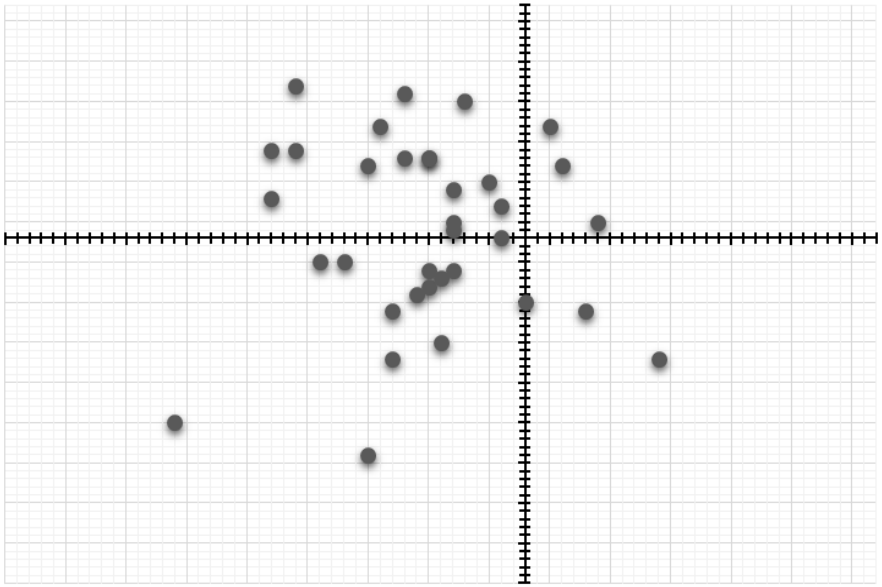
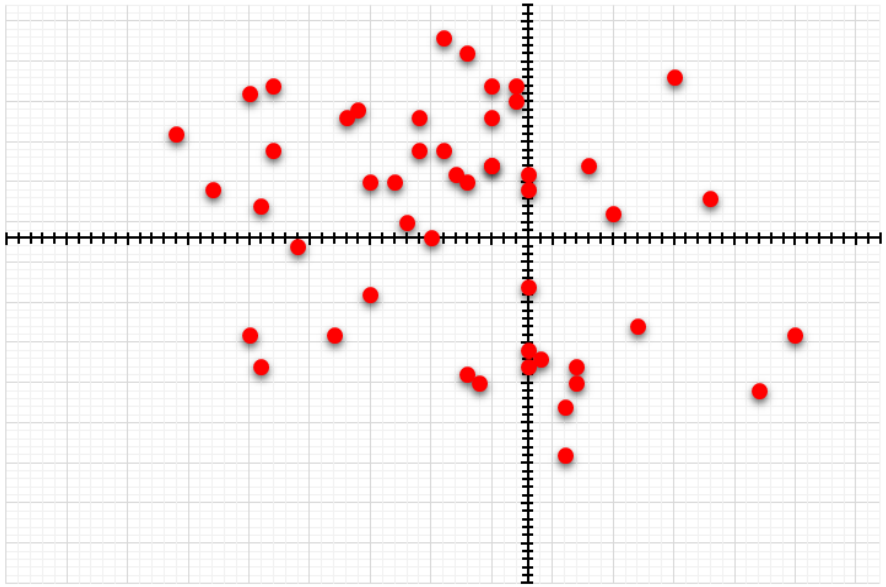
Results

- End of Semester

Control Group (*n* = 35) Ending KLSI Scores
(C_1 O_2)



HIE Group (*n* = 49) Ending KLSI Scores
(T_1 O_2)



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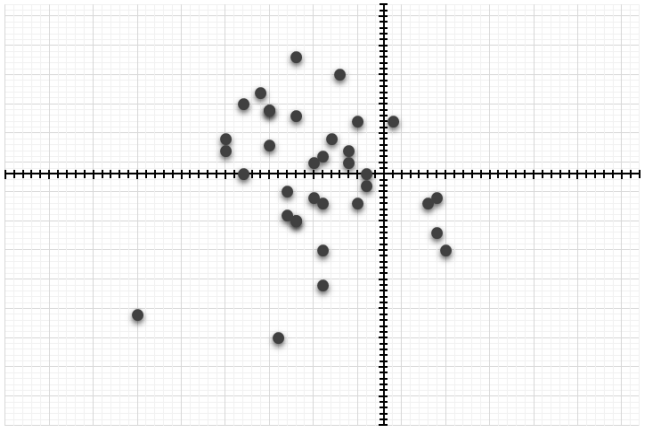
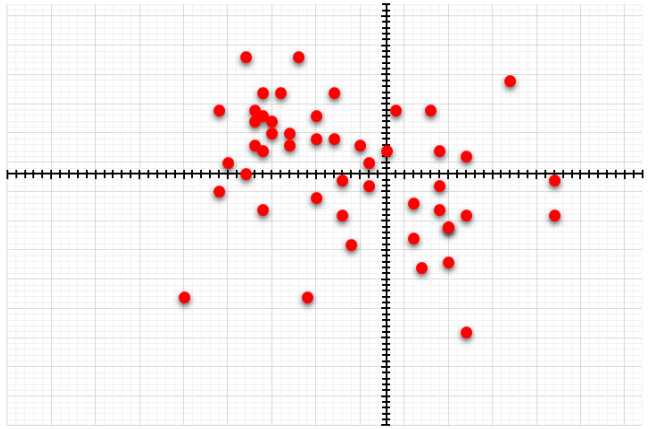
Results

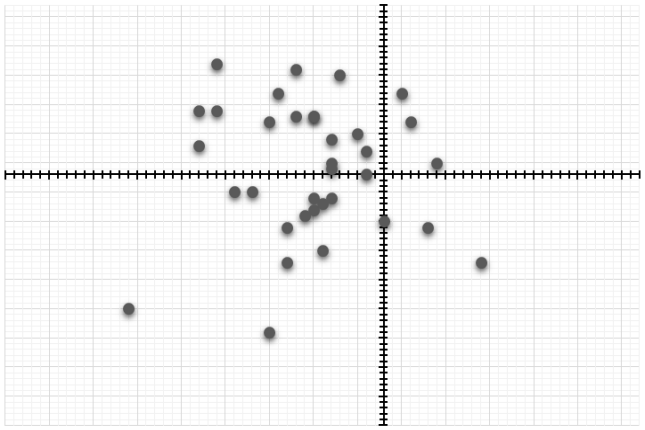
Control Group (n = 35) Beginning KLSI Scores (C_1 O_1)



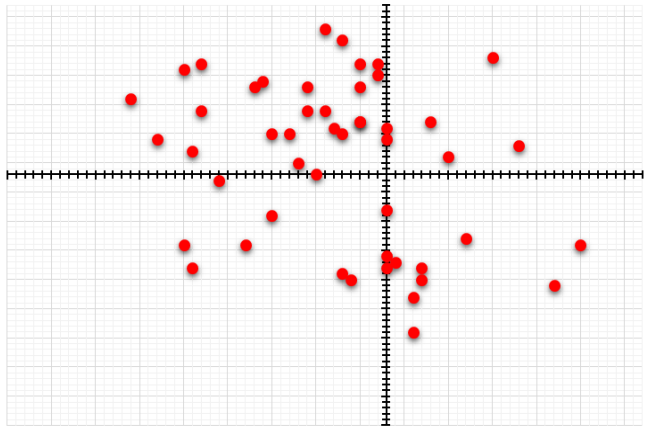
HIE Group (n = 49) Beginning KLSI Scores (T_1 O_1)



Control Group (n = 35) Ending KLSI Scores (C_1 O_2)



HIE Group (n = 49) Ending KLSI Scores (T_1 O_2)



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Results

- There were significant differences between groups
- Null hypothesis was rejected

Multivariate Tests

	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[b]
Pillai's trace	.268	7.247[a]	4.000	79.000	.000	.268	28.986	.994
Wilks' lambda	.732	7.247[a]	4.000	79.000	.000	.268	28.986	.994
Hotelling's trace	.367	7.247[a]	4.000	79.000	.000	.268	28.986	.994
Roy's largest root	.367	7.247[a]	4.000	79.000	.000	.268	28.986	.994

Each F tests the multivariate effect of HIE Current Semester. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means.

a. Exact statistic

b. Computed using alpha = .05

- Hotelling's $T^2 = 0.37$; $F(4, 79) = 7.25$; $p \leq 0.01$; $\eta_p^2 = 0.27$; $1 - \beta = 0.99$)

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Results

- Univariate main effects as a post hoc to significant MANOVA

Univariate Tests

Dependent Variable		Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[a]
Change in AC	Contrast	45.067	1	45.067	4.298	.041	.050	4.298	.535
	Error	859.886	82	10.486					
Change in CE	Contrast	95.184	1	95.184	11.783	.001	.126	11.783	.924
	Error	662.376	82	8.078					
Change in AE	Contrast	255.677	1	255.677	12.830	.001	.135	12.830	.943
	Error	1634.073	82	19.928					
Change in RO	Contrast	270.028	1	270.028	16.350	.000	.166	16.350	.979
	Error	1354.294	82	16.516					

The F tests the effect of HIE Current Semester. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

a. Computed using alpha = .05

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Conclusions/Implications

- Students undertaking a high-impact experiences appear had more change in learning style
- Post-secondary educators stimulate more change through implementing HIE practices in their instruction
- Students are likely more engaged in the instruction on a personal level and environmental factors are at work (Kolb & Kolb, 2005)

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Conclusions/Implications

- Although all areas had change RO exhibited the greatest differences
  - What is it about HIE that would change reflective observation?
- AC had the least difference in change
  - Are there factors about an HIE that would not influence abstract conceptualization?

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Conclusions/Implications

- Is learning style change desirable? If so, which direction do we want students to move?
- More research is needed to determine the implications of directionality of learning style change

What are the questions???