

# The NSSE Update: Analysis and Design of Ten New Engagement Indicators

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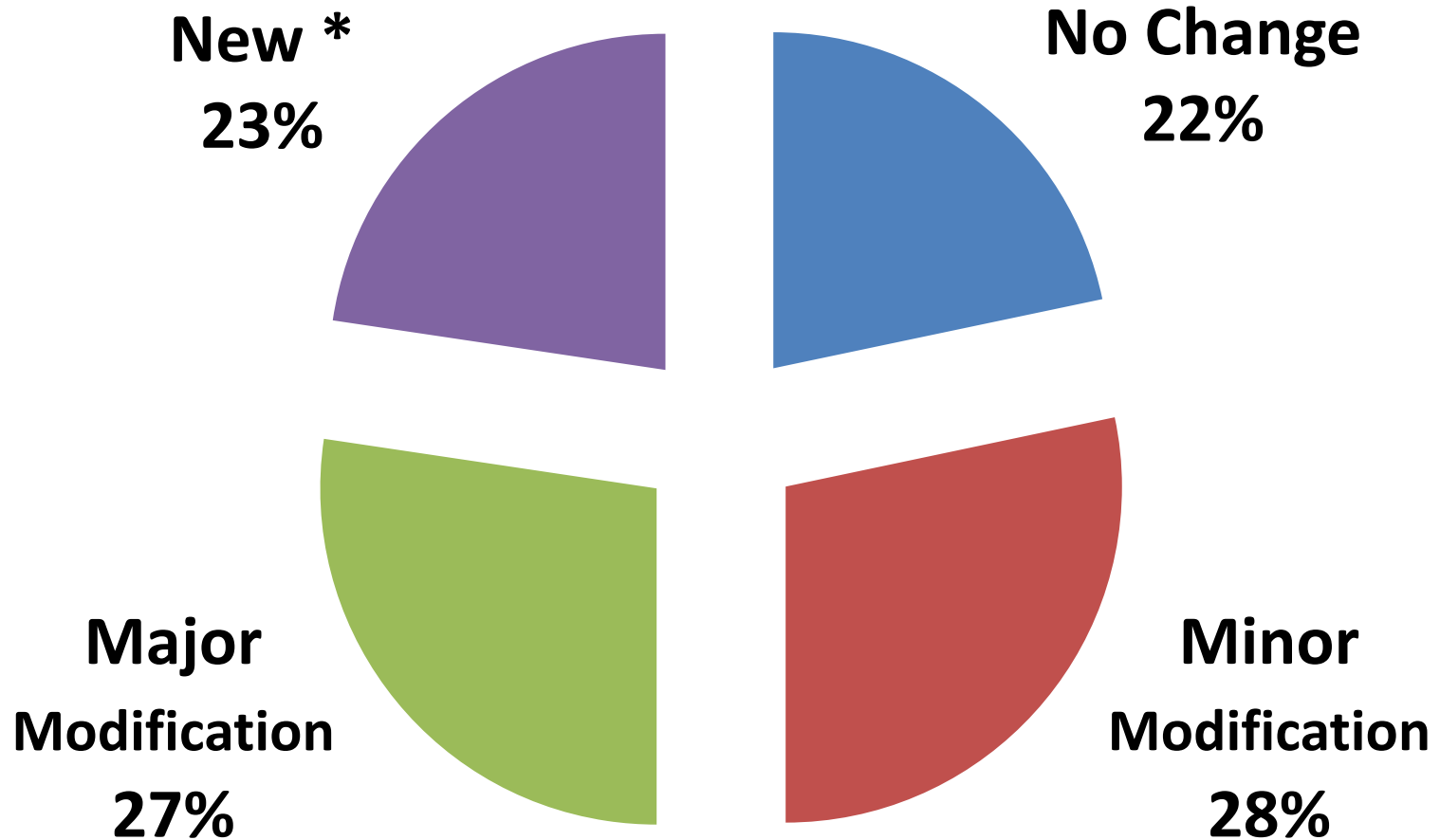


NSSE Webinar - 4/29/14

# Goals and Purposes

- To continue in our core purpose of assessing student engagement in effective educational practices to inform improvement efforts
- To stay current with movements and trends in higher education, and incorporate new measures relevant to effective teaching and learning
- To improve the clarity, consistency, and applicability of the survey
- To improve the properties of existing measures

# The Updated NSSE



\* Offset by deletions

# Engagement

**Student engagement is a domain of constructs representing two critical features of collegiate quality.**

1. The amount of time and effort students put into educationally purposeful activities, and
2. How the institution organizes the curriculum and other learning opportunities to get students to participate in such activities.

# Engagement Indicators

More **specificity**

More **actionability**

# Themes and Indicators

## *Themes*

## *Engagement Indicators*

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**Academic Challenge**

**Higher-Order Learning**  
**Reflective & Integrative Learning**  
**Learning Strategies**  
**Quantitative Reasoning**

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**Learning with Peers**

**Collaborative Learning**  
**Discussions with Diverse Others**

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**Experiences with Faculty**

**Student-Faculty Interaction**  
**Effective Teaching Practices**

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**Campus Environment**

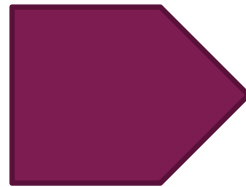
**Quality of Interactions**  
**Supportive Environment**

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# Themes and Indicators

## NSSE Benchmarks 2000 - 2012

**Level of  
Academic  
Challenge**



## Engagement Indicators

**Higher-Order Learning**

**Reflective & Integrative Learning**

**Learning Strategies**

**Quantitative Reasoning**

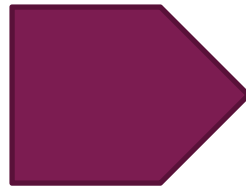
*Theme: Academic Challenge*

Expanded to focus on distinct dimensions of academic effort, including new topics of interest. In addition, key items on reading, writing, and study time are reported with this theme.

# Themes and Indicators

**NSSE  
Benchmarks  
2000 - 2012**

**Active and  
Collaborative  
Learning**



**Engagement Indicators**

**Collaborative Learning**

**Discussions with Diverse Others**

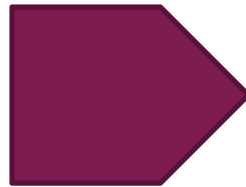
*Theme: Learning with Peers*

Modified to emphasize student-to-student collaboration. Updated diversity items from Enriching Educational Experiences have been moved here.



# Themes and Indicators

**NSSE  
Benchmarks  
2000 - 2012**



**Engagement Indicators**

**Student-Faculty Interaction**

**Effective Teaching Practices**

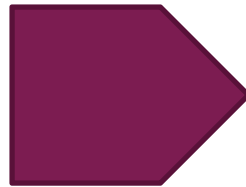
*Theme: Experiences with Faculty*

The updated Student-Faculty Interaction indicator is joined by a second measure about effective teaching practices.

# Themes and Indicators

**NSSE  
Benchmarks  
2000 - 2012**

**Supportive  
Campus  
Environment**



**Engagement Indicators**

**Quality of Interactions**

**Supportive Environment**

*Theme: Campus Environment*

Expanded to focus separately on interactions with key people at the institution and perceptions of the institution's learning environment.



## Item by Item Comparisons of the Original and Updated NSSE

View the updated survey at [nsse.iub.edu/links/surveys](http://nsse.iub.edu/links/surveys)

(January 2014)

Original NSSE Items (2012 version)			Updated NSSE Items (2014 version)			Comparison <sup>a</sup>
Item #	Variable name	Item Wording	Item #	Variable name	Item Wording	2012 - 2013
1a	clquest	How often... Asked questions in class or contributed to class discussions	1a	askquest	How often... Asked questions or contributed to course discussions in other ways	Min
1b	clipresen	How often... Made a class presentation	1i	present	How often... Gave a course presentation	Min
1c	revropap	How often... Prepared two or more drafts of a paper or assignment before turning it in	1b	drafts	How often... Prepared two or more drafts of a paper or assignment before turning it in	=
1d	integrat	How often... Worked on a paper or project that required integrating ideas or information from various sources				Del
1e	divclass	How often... Included diverse perspectives (different races, religions, genders, political beliefs, etc.) in class discussions or writing assignments	2c	RIdiverse	How often... Included diverse perspectives (political, religious, racial/ethnic, gender, etc.) in course discussions or assignments	Min
1f	chunprep	How often... Come to class without completing readings or assignments	1c	unprepared	How often... Come to class without completing readings or assignments	=
1g	classgrp	How often... Worked with other students on projects during class				Maj
1h	occgrp	How often... Worked with classmates outside of class to prepare class assignments	1h	CLproject	How often... Worked with other students on course projects or assignments	Maj
1i	intideas	How often... Put together ideas or concepts from different courses when completing assignments or during class discussions	2a	RIintegrate	How often... Combined ideas from different courses when completing assignments	Maj
1j	tutor	How often... Tutored or taught other students (paid or voluntary)	1f	Clexplain	How often... Explained course material to one or more students	Maj
1k	commproj	How often... Participated in a community-based project (e.g., service learning) as part of a regular course	12	servcourse	About how many of your courses at this institution have included a community-based project (service-learning)	Maj <sup>1,2</sup>
1l	itacadem	How often... Used an electronic medium (listserv, chat group, Internet, instant messaging, etc.) to discuss or complete an assignment				Del
1m	email	How often... Used e-mail to communicate with an instructor				Del
1n	facgrade	How often... Discussed grades or assignments with an instructor				Del
1o	facplans	How often... Talked about career plans with a faculty member or advisor	3a	SFcareer	How often... Talked about career plans with a faculty member	Min
1p	facideas	How often... Discussed ideas from your readings or classes with faculty members outside of class	3c	SFdiscuss	How often... Discussed course topics, ideas, or concepts with a faculty member outside of class	Min

# Engagement Indicators

## Scoring

- **60-point scales**

- Each item is recoded to 60-point range (e.g., Never=0, Sometimes=20, Often=40, Very often=60)
- Student's EI is the average score across the individual items.
- Institution's EI is weighted average by class level
- EI's with five or more items are computed even if a student skips one item

# Engagement Indicator Report

Use the following key:

- ▲ Your students' average was significantly higher ( $p < .05$ ) with an effect size at least .3 in magnitude.
- △ Your students' average was significantly higher ( $p < .05$ ) with an effect size less than .3 in magnitude.
- No significant difference.
- ▽ Your students' average was significantly lower ( $p < .05$ ) with an effect size less than .3 in magnitude.
- ▼ Your students' average was significantly lower ( $p < .05$ ) with an effect size at least .3 in magnitude.

## First-Year (FY) Students

<i>Theme</i>	<i>Engagement Indicator</i>	Your FY students compared with Ohio Public	Your FY students compared with Peer and Aspirant	Your FY students compared with NSSE 2013
<i>Academic Challenge</i>	Higher-Order Learning	--	▽	--
	Reflective and Integrative Learning	▽	▼	▼
	Learning Strategies	--	--	--
	Quantitative Reasoning	--	--	--
<i>Learning with Peers</i>	Collaborative Learning	▲	--	△
	Discussions with Diverse Others	--	▽	--
<i>Experiences with Faculty</i>	Student-Faculty Interaction	▲	--	△
	Effective Teaching Practices	--	--	--
<i>Campus Environment</i>	Quality of Interactions	--	▽	--
	Supportive Environment	△	▽	--

















# Engagement Indicator Report

## Mean Comparisons

<i>Engagement Indicator</i>	NSSEville State <i>Mean</i>	Your first-year students compared with					
		Public Research Univ		Large Public		NSSE 2013	
		<i>Mean</i>	<i>Effect size</i>	<i>Mean</i>	<i>Effect size</i>	<i>Mean</i>	<i>Effect size</i>
Higher-Order Learning	38.3	38.5	-.01	38.6	-.03	39.1	-.06
Reflective & Integrative Learning	35.0	34.8	.02	35.0	.00	35.7	-.06
Learning Strategies	40.1	38.6 ***	.11	38.8 **	.09	39.8	.03
Quantitative Reasoning	28.5	28.0	.03	27.9	.04	27.3 *	.07

# Engagement Indicator Report

## Summary of Indicator Items

Higher-Order Learning	NSSEville State	Public Research		NSSE 2013
		Univ	Large Public	
<i>Percentage responding "Very much" or "Quite a bit" about how much coursework emphasized...</i>	%	%	%	%
4b. Applying facts, theories, or methods to practical problems or new situations	70 	75 	75 	74 
4c. Analyzing an idea, experience, or line of reasoning in depth by examining its parts	69 	72 	72 	73 
4d. Evaluating a point of view, decision, or information source	70 	66 	66 	70 
4e. Forming a new idea or understanding from various pieces of information	69 	66 	66 	69 



# Scale Development and Testing

- **Data**
- **Methods**
- **Results**



# Data: Pilot Administrations

- 2011
  - 19 institutions; 20,000 students
  - Institutional response rate average of 35%
- 2012
  - 55 institutions; 50,000 students
  - Institutional response rate average of 28%

# Data: 2013 NSSE Sample

- 335,702 students
  - 41% first-year, 59% senior
  - 64% female
  - 70% White
  - 87% full-time
  - 29% at least 24 years old
  - 34% transfer student
  - 46% first generation
  - 35% living on campus
  - 10% taking all classes online
- 586 US colleges and universities
  - 61% Private
  - 20% research universities
  - 46% master's granting
  - 34% bachelor's granting
- 30% average response rate

# Methods: Qualitative

- Qualitative information (pilot analyses)
  - In 2011 and 2012, 120 students in cognitive interviews, 79 students in 10 focus groups at 12 different campuses, phone interviews for specific questions, write-in responses from students completing the pilots, feedback from outside sources and institutional users

# Methods: Individual Items

- Analyses were completed for all students and separately for online-only students
- Item descriptives included frequencies and means by class level, class level and gender, and class level and enrollment status
- Demographics results were compared to institution-provided information and available national databases

# Methods: Engagement Indicators

- Exploratory factor analysis
- Confirmatory factor analysis
- Aggregate descriptives
- Validity differences by groups
- Internal consistency reliability
- Generalizability theory
- Concurrent validity (2011 pilot)
- Predictive validity (2012 pilot)
- Item response theory (2011 & 2012 pilot)

# Methods: Criteria

- Full explanation of methods and criteria will be posted on the NSSE website
- Some example criteria:
  - Internal consistency
    - Cronbach's  $\alpha \geq .7$
    - Average inter-item correlation between .15 and .50
    - Range of inter-item correlations between .15 and .85
  - Generalizability
    - Coefficients  $\geq .7$  are acceptable,  $\geq .8$  are good
    - Interpreting results for dependability of generalizability with samples around 25 students

# Results: Themes & Engagement Indicators

- Academic Challenge
  - Higher-Order Learning
  - Reflective & Integrative Learning
  - Learning Strategies
  - Quantitative Reasoning
- Learning with Peers
  - Collaborative Learning
  - Discussions with Diverse Others
- Experiences with Faculty
  - Student-Faculty Interaction
  - Effective Teaching Practices
- Campus Environment
  - Quality of Interactions
  - Supportive Environment

# Academic Challenge:

## Higher-Order Learning, Reflective & Integrative Learning

	HO	RI
Item Descriptives	✓	✓
Qualitative Information	✓	✓
Exploratory Factor Analysis	✓	✓
Confirmatory Factor Analysis	✓	✓
Aggregate Descriptives	✓	✓
Known Differences by Groups	✓	✓
Concurrent Validity	✓	✓
Predictive Validity	✓	✓
Internal Consistency Reliability	✓	✓
Generalizability Theory	✓	✓
Appropriate for Online Students?	✓	✓

- Els met all criteria with no concerns.



# Academic Challenge:

## Learning Strategies, Quantitative Reasoning

	LS	QR
Item Descriptives	✓	✓
Qualitative Information	✓	✓
Exploratory Factor Analysis	✓	✓
Confirmatory Factor Analysis	✓	✓
Aggregate Descriptives	✓	✓
Known Differences by Groups	✓	✓
Concurrent Validity	-	✓
Predictive Validity	✓	✓
Internal Consistency Reliability	✓	✓
Generalizability Theory	✓	✓
Appropriate for Online Students?	✓	✓

- QR: items were more challenging for non-STEM majors, students spent more time thinking about these items but were able to answer them
- QR: no sig. relationship with GPA but strong relationship with persistence
- LS & QR: results are dependable when generalizing over students for samples of around 50 students

# Learning with Peers:

## Collaborative Learning, Discussions with Diverse Others

	CL	DD
Item Descriptives	✓	✓
Qualitative Information	✓	✓
Exploratory Factor Analysis	✓	✓
Confirmatory Factor Analysis	✓	✓
Aggregate Descriptives	✓	✓
Known Differences by Groups	✓	✓
Concurrent Validity	✓	✓
Predictive Validity	✓	?
Internal Consistency Reliability	✓	✓
Generalizability Theory	✓	✓
Appropriate for Online Students?	✓	?

- DD: many online students had limited knowledge about their peers and had discussions limited to brief posts on discussion boards
- DD: no sig relationship with GPA but small relationship with persistence
- DD: alphas and inter-correlations were very high for online students, particularly differences by race and economic background

# Experiences with Faculty:

## Student-Faculty Interaction, Effective Teaching Practices

	SF	ET
Item Descriptives	✓	✓
Qualitative Information	✓	✓
Exploratory Factor Analysis	✓	✓
Confirmatory Factor Analysis	✓	✓
Aggregate Descriptives	✓	✓
Known Differences by Groups	✓	✓
Concurrent Validity	✓	✓
Predictive Validity	✓	-
Internal Consistency Reliability	✓	✓
Generalizability Theory	✓	✓
Appropriate for Online Students?	✓	✓

- Els met all criteria with no concerns.

# Campus Environment:

## Quality of Interactions, Supportive Environment

	QI	SE
Item Descriptives	✓	✓
Qualitative Information	✓	✓
Exploratory Factor Analysis	✓	✓
Confirmatory Factor Analysis	✓	✓
Aggregate Descriptives	✓	✓
Known Differences by Groups	✓	✓
Concurrent Validity	✓	✓
Predictive Validity	✓	✓
Internal Consistency Reliability	✓	✓
Generalizability Theory	✓	✓
Appropriate for Online Students?	✓	?

- CFA results were adequate, but not ideal for online seniors
- SE: intercorrelations were higher than ideal, particularly items about campus events and activities

# Questions?

Paper, presentation, and more  
information about NSSE at  
**[nsse.iub.edu](https://nsse.iub.edu)**

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