


Testing the New Scales on the Faculty Survey of Student Engagement



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Session Outline

- Updating the NSSE and FSSE
- Introduce new FSSE Scales
- Overview of Scales in reporting
- Scale Development and Testing
 - Data
 - Methods
 - Results
- Future Testing

Goals of the Survey Update

- 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;
- To improve the clarity, consistency, and applicability of the survey;
- To improve the properties of existing measures; and
- To incorporate new measures relevant to effective teaching and learning

Themes and Scales

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

FSSE Scales

Scoring

- **60-point scales**
 - Each item is recoded to 60-point range (e.g., Never=0, Sometimes=20, Often=40, Very often=60)
 - Faculty member's score is the average score across the individual items.
 - Institution's scale scores is the average of faculty scores
 - Scales with five or more items are computed even if a faculty member skips one item

Disciplinary Area Report

- Means, Standard deviations, and counts for each FSSE scale across institution-created disciplinary groupings

FSSE Scale	Means										Standard Deviations ^a										N	
	AC	LE	EX	CE	AC	LE	EX	CE	AC	LE	EX	CE	AC	LE	EX	CE	AC	LE	EX	CE		
Academic Challenge																						
Higher-Order Learning	41.2	40.3	41.9	40.0	39.8	44.6	41.7	40.0	39.3	33.8	38.8	34.3	33.3	18.8	15.3	15.9	21	30	39	47	38	
Reflective & Int. Learning	48.8	48.8	48.8	53.6	57.2	49.8	50.7	47.3	38.9	3.8	10.5	14.8	14.8	8.8	12.2	18.7	28	32	42	47	38	
Learning Strategies	36.3	35.8	35.0	37.3	37.8	41.9	34.9	40.9	37.9	38.2	38.7	37.2	38.7	31.3	38.7	34.9	27	31	40	48	37	
Quantitative Reasoning	33.3	32.2	33.8	36.0	37.2	38.4	40.0	37.6	37.5	33.9	37.5	37.5	36.3	38.2	37.8	39.8	27	30	40	48	36	
Learning with Peers																						
Collaborative Learning	39.4	37.1	37.4	38.0	38.8	37.7	40.8	38.6	35.7	37.6	37.4	37.3	37.7	37.2	37.8	38.2	28	40	48	48	36	
Discussions with Diverse Others	38.1	38.1	37.4	38.0	37.1	38.2	37.8	36.3	38.5	42.7	37.4	38.8	38.4	38.8	38.3	37.7	26	31	40	48	36	
Experiences with Faculty																						
Student-Faculty Interaction	38.7	37.7	37.9	37.6	37.9	38.8	38.3	38.7	37.9	3.8	12.9	12.9	32.8	33.3	32.8	30	32	41	50	38		
Campus Environment																						
Quality of Interactions	44.3	44.2	44.7	47.2	47.2	48.7	48.4	48.0	4.8	10.1	4.4	10.8	8.8	18.8	8.2	8.1	28	31	41	51	40	
Supportive Environment	48.1	48.4	48.1	48.0	48.6	48.8	48.4	48.1	8.1	10.1	8.4	12.8	8.4	14.7	12.8	12.2	21	26	47	58	41	

Disciplinary Area Report

FSSE Scale	Arts	Humanities	Soc Sci	Sci & Math	Bus
Academic Challenge					
Higher-Order Learning	-	+	-	-	-
Reflective & Int. Learning	+	+	+	-	-
Learning Strategies	+	+	+	-	-
Quantitative Reasoning	-	-	+	+	+
Learning with Peers					
Collaborative Learning	-	-	-	-	+
Discussions with Div. Others	-	+	+	-	+

Key:

- + Faculty in this discipline score higher than the institution's average on the given FSSE scale.
- Faculty in this discipline score lower than the institution's average on the given FSSE scale.

Scale Development and Testing

- Data
 - 2012 pilot
 - 2013 administration
- Methods
 - Item-level
 - Scale-level
- Results

Data: 2012 Pilot, 2013 Administration

- 2012 pilot
 - 22 institutions; 4844 faculty
- 2013 administration
 - 146 institutions
 - 61% Private
 - 16% research universities
 - 45% master's granting
 - 40% bachelor's granting
 - 18,133 faculty
 - Institutional response rate average of 49%

Data: 2013 FSSE Sample

- 18,133 faculty
 - 51% female
 - 73% White
 - 73% full-time
- 26% Professor
- 27% Associate professor
- 29% Assistant professor
- 14% Instructor or Lecturer
- 25% Arts & Humanities
- 6% Biological Sciences
- 11% Physical Sciences, Math, Comp Sci
- 13% Social Science
- 11% Business
- 4% Communications
- 11% Education
- 3% Engineering
- 12% Health Professions
- 5% Social Science Professions

Methods: Individual Items

- Analyses were completed for all faculty, separated by those that teach lower- and upper-division courses
- Item descriptives included frequencies, proportion of missing values, means, standard error of the means, standard deviations, skewness, standard error of skewness, kurtosis, standard error of kurtosis

Methods: Scale Analysis

- Exploratory factor analysis
 - Used items parallel to NSSE Engagement Indicator items, oblique rotation
- Confirmatory factor analysis
 - Used EFA results as guide, first created models for upper-division faculty
- Scale descriptives
 - Same descriptives as item-level analysis
- Internal consistency reliability
 - Cronbach's alphas, inter-item correlations, item-scale correlations
- Generalizability theory
 - Looking for minimum sample size for generalizability for an institution

Methods: Criteria Examples

- Full explanation of methods and criteria will be posted on the FSSE 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, $\geq .9$ are good

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Academic Challenge:

Higher-Order Learning, Reflective & Integrative Learning

	fHO	fRI
Item Descriptives	✓	✓
Exploratory Factor Analysis	✓	✓
Confirmatory Factor Analysis	✓	✓
Scale Descriptives	✓	✓
Internal Consistency Reliability	✓	✓
Generalizability Theory	✓	✓

- Items and scales are slightly skewed left (average score is above midpoint)

Academic Challenge:

Higher-Order Learning, Reflective & Integrative Learning

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Generalizability Theory	✓	✓

- Items and scales are slightly skewed left (average score is above midpoint)
 - Item about emphasis on application is weakest in CFA and internal consistency
 - CFA implied different models for LD and UD
- fHO gen: LD 50, UD 25
 - fRI gen: 25

Academic Challenge:

Learning Strategies, Quantitative Reasoning

	fLS	fQR
Item Descriptives	✓	✓
Exploratory Factor Analysis	✓	✓
Confirmatory Factor Analysis	✓	✓
Scale Descriptives	✓	✓
Internal Consistency Reliability	✓	✓
Generalizability Theory	✓	✓

- fLS: items and scale are slightly skewed left
 - fQR: average inter-item correlation was high, but range of inter-item correlations were within limits
- fLS gen: LD 25, UD 50
 - fQR gen: 25

Learning with Peers:

Collaborative Learning, Discussions with Diverse Others

	fCL	fDD
Item Descriptives	✓	✓
Exploratory Factor Analysis	✓	✓
Confirmatory Factor Analysis	✓	✓
Scale Descriptives	✓	✓
Internal Consistency Reliability	✓	✓
Generalizability Theory	✓	✓

- fDD: average inter-item correlation was high, but range of inter-item correlations were within limits
- fCL gen: 25
 - fDD gen: 25, best generalizable scale

Experiences with Faculty:

Student-Faculty Interaction

	fsf ?
Item Descriptives	✓
Exploratory Factor Analysis	✓
Confirmatory Factor Analysis	✓
Scale Descriptives	✓
Internal Consistency Reliability	✓
Generalizability Theory	✓

- No parallel for the NSSE Engagement Indicator Effective Teaching Practices
- fsf gen: 25

Campus Environment:

Quality of Interactions, Supportive Environment

	fqi	fse
Item Descriptives	✓	✓
Exploratory Factor Analysis	✓	✓
Confirmatory Factor Analysis	✓	✓
Scale Descriptives	✓	✓
Internal Consistency Reliability	✓	✓
Generalizability Theory	✓	✓

- EFA indicated potential subscales
- fqi gen: 25
- fse gen: 25

Other Scale Explorations

- Effective Teaching Practices
 - This measure did not meet minimum requirements for internal consistency analysis
 - Additional items added to FSSE 2014
- Supportive Environment Subscales
 - SE-Academic (use with caution)
 - SE-Social (potential quality subscale)
- Course Goals, HIP Importance for future study

Future Testing

- Concurrent Validity
- Predictive Validity
- Known-Groups Validity
- Consequential Validity
- Temporal Stability Reliability
- Missing Data, Response Drop Off, Straight Lining, Duration
- **Anything else?!**

Questions?

Paper, presentation, and more information about FSSE at fsse.iub.edu



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