The Dependability of the NSSE 2012 Pilot: A Generalizability Study

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• 2013 NSSE
• Group Level Assessment
• Generalizability Theory
• Methods
• Demonstration
• Results
• Discussion
• Q&A
Goals for the 2013 NSSE

• 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 measurement properties of existing measures
• To incorporate new measures relevant to effective teaching and learning
Revision Process

• Two Pilot Surveys
  – Winter 2011
  – Winter 2012
  – Experimental items

• Methods
  – Qualitative
  – Quantitative
New Engagement Indicators

• Deep Approaches to Learning
  – Higher Order Learning
  – Reflective & Integrative Learning

• Academic Challenge
  – Learning Strategies
  – Quantitative Reasoning

• Interactions with diversity

• Collaborative Learning

• Experiences with Faculty
  – Student-Faculty Interaction
  – Good Teaching Practices

• Campus Environment
  – Quality of Interactions
  – Supportive Environment

• Self-Reported Gains
Group Level Assessment

• Benchmarking
  – Compares student responses with those at similar institutions
  – Diagnostic information about how students are learning

• Subgroup analyses
  – Examines how engagement varies within an institution
  – Identify areas for improvement

• Both approaches utilize aggregate measures
Generalizability Theory

• Methodological framework for assessing the dependability of measurements
• Facets
• The universe
• Reliability & Generalizability
G & D-Studies

• G-study
  – ANOVA
  – Variance components
  – Generalizability coefficient
  – Relationship to ICCs

• D-study
  – Post hoc analysis
  – Different situations
• Generalizing over students and items
  – Items and students drawn from a universe of possible observations
  – Higher order construct

<table>
<thead>
<tr>
<th>Mean of classroom A</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Student 1</td>
<td>Item a</td>
</tr>
<tr>
<td>Student 2</td>
<td>Item b</td>
</tr>
<tr>
<td>Student 3</td>
<td>Item c</td>
</tr>
<tr>
<td>Student 4</td>
<td>Item d</td>
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<table>
<thead>
<tr>
<th>Mean of classroom B</th>
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</thead>
<tbody>
<tr>
<td>Student 5</td>
<td>Item e</td>
</tr>
<tr>
<td>Student 6</td>
<td>Item f</td>
</tr>
<tr>
<td>Student 7</td>
<td>Item g</td>
</tr>
<tr>
<td>Student 8</td>
<td>Item h</td>
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</tbody>
</table>
Generalizability Coefficients

• Generalizing over students
  – Students drawn from a universe possible of observations
  – Items are fixed

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Research Questions

1. How dependable are the proposed NSSE performance indicators?
2. How many students are needed to produce a dependable group mean?
• 2nd Pilot of NSSE
• Administered in Winter 2012
• Sample
  – 16,878 first-year students
  – 28,277 seniors
• 53 U.S. institutions
Methods - G-study

• Outcome: Institutional mean of the NSSE engagement indicators
• Facets: Students and items
• Split-plot ANOVA
  – Students nested within institutions and crossed with items
• 75 students randomly selected from each institution
• Variance components
• Generalizability coefficients
Methods – D-Study

• Variance components from G-study
• Generalizability coefficients with hypothetical sample sizes: 25, 50, 100, 200
Demonstration
# Results

## Generalizing over Students & Items

<table>
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<tr>
<th>Engagement Indicator</th>
<th>N = 25</th>
<th>N = 50</th>
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<tr>
<td>Reflective &amp; Integrative Learning</td>
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<td>Learning Strategies</td>
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### Key:
- ![≥ .70](https://example.com) for FYs & SRs
- ![≥ .70](https://example.com) for FYs only
- ![≥ .70](https://example.com) for SRs only
## Results

### Generalizing over Students

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**Key:**
- ![Symbol]: $Ep^2 \geq .70$ for FYs & SRs
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Limitations

- Relatively small sample of institutions
  - May not be representative
  - May understate institutional variation and depress generalizability coefficient

- Object of measurement
  - Results may differ for majors or demographic groups

- Validity
Discussion

• Engagement indicators are dependable measurements of group means

• Design of NSSE instrument
  – Examines specific activities and institutional contexts
  – Blunt survey instrument

• Group level analyses
Questions?


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