Overview of Research Activities

Presentation at the IACC-ISU Academic Leaders Roundtable
Larry Ebbers, Frankie Santos Laanan, Linda Serra Hagedorn

Iowa State University
Maple-Willow Larch Commons
February 4, 2011
Introduction

• Overview of OCCRP Folder
• CCLP Academic Programs
• CCLP Graduates and Dissertation Topics
• Iowa Community College Faculty Survey
• ISU NSSE Studies: Transfer Students
• Current and Future Collaboration with Iowa Area Community Colleges
• Q & A
CCLP Academic Programs

- CLIC and LINC
- Master’s Degree Program
  - Leadership
  - Teaching and Learning
  - CTE and STEM
- Ph.D., Educational Leadership
  - Emphasis in Community College Leadership

www.cclp.hs.iastate.edu
CCLP Dissertation Topics

- Academic Success
- Access
- Accreditation
- Career and Technical Education
- Dual Enrollment
- Faculty, Staff, Professional Development
- Health Education and Nursing
- Information Literacy
- Information Technology
- Leadership
- Learning Communities
- Student Retention and Persistence
- Transfer Students
- Workforce Development
Current Study

Iowa Community College Faculty Survey (full-time)

• Three doctoral student dissertations:
  – Rogotzke [NIACC], Bradley [SWCC] & Miller [IHCC]

• Recruitment of participants (*request support and assistance*)

• Spring 2011 survey administration

• Survey Contents:
  – Employment Background
  – Responsibilities and Workload
  – Teaching and Learning
  – Professional Development
  – Student Relations
  – Partnerships
  – Job Choice and Satisfaction
  – Open-Ended Questions

Topics:
• Profile and demographics
• STEM issues
• Faculty role in STEM education
• Professional development
Iowa Community College

• Flow of GED graduates to Iowa community colleges
  – Data Sources: Iowa DE CCWP, GED data

Achieving the Dream

National Pell Study

• Effects of increasing Pell and CC student success
  – Study of Iowa community colleges

Topics:
• GED demographics
• GED Flow to community colleges
• Student success outcomes (e.g., retention, transfer, degree/certificate completion, etc.)
About OCCRP

• The Office of Community College Research and Policy (OCCRP) at Iowa State University is focused on *creating, sharing, and applying knowledge in the context of community college education.*

• The mission of the OCCRP is to *articulate and analyze the issues affecting policy and practice* by conducting rigorous research which impacts students, faculty, administrators, and policymakers.

• The OCCRP is *committed to sharing our research with diverse constituents* through dissemination efforts such as publications, conference presentations, and professional workshops.
Collaboration with IA CCs

National Science Foundation
• Student Enrollment and Engagement Through Connections [SEEC].
  – Iowa State University College of Engineering and Des Moines Area Community College [DMACC]

Future Collaboration
• NSF grants: research, programs, etc.
• Other research collaboration
A Study of Student Engagement and Satisfaction: An Examination of Vertical and Horizontal Transfers at a Large Research University

Frankie Santos Laanan
Yi (Leaf) Zhang
Iowa State University

February 4, 2011
Purpose of Study

• To identify differences between *vertical* and *horizontal* transfer students regarding engagement and overall satisfaction.

• To better understand university experiences of *vertical* and *horizontal* transfer students.

• To explore factors that influence *vertical* and *horizontal* transfer students’ overall satisfaction with the university.
Research Questions

• What are the demographic characteristics of vertical and horizontal transfers at a large research university in the Midwest?

• To what extent do vertical transfers differ from horizontal transfers in:
  – student-faculty interaction
  – quality of campus relationships
  – institutional support
  – enhanced learning experience, and
  – overall satisfaction with the university

• What factors predict vertical and horizontal transfer students’ overall satisfaction?
Relevant Literature

- Examining the Transfer Student Experience: Interaction with Faculty, Campus Relationship, and Overall Satisfaction (McCormick, et al., 2009)
  - 148,292 seniors, from 712 four-year institutions
  - 2008 NSSE data
  - Vertical, horizontal transfers, and native students
  - NSSE benchmarks

- A Study of Student Engagement and Satisfaction: An Examination of Vertical and Horizontal Transfers at a Large Research University (Laanan & Zhang, 2010)
  - 1156 seniors from one four-year institution
  - 2005-2009 NSSE data
  - Vertical and horizontal students
  - Constructs emerged from exploratory factor analysis
Figure 1. Theoretical framework of transfer student experiences
Methodology

• **Data Source:** 2005-2009 NSSE in a large research university in the Midwest.

• **National Survey of Student Engagement (NSSE)**
  
  – A national survey first administered in 2000
  – Random samples of first-year and senior students
  – Assesses college student experiences across different types of institutions in the U.S. and Canada:
    • Demographics
    • Enrollment characteristics
    • Academic challenges
    • Interaction with faculty
    • Relationship with peers, faculty, and administrators
    • Overall satisfaction of college experience

• **Response Rates:**
  
  – 31.9% (2005); 40.6% (2006); 24.7% (2007); 30.6% (2008); 24.0% (2009)
Methodology

• Definition
  – **Vertical transfers**: seniors who *only* indicated attending a community or junior college prior to the university
  – **Horizontal transfers**: seniors who *only* indicated attending another four-year college prior to the university

• Sample

<table>
<thead>
<tr>
<th>Transfer Type</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal</td>
<td>55</td>
<td>62</td>
<td>71</td>
<td>88</td>
<td>62</td>
<td>338</td>
</tr>
<tr>
<td>Vertical</td>
<td>144</td>
<td>204</td>
<td>149</td>
<td>183</td>
<td>138</td>
<td>818</td>
</tr>
<tr>
<td>Total</td>
<td>199</td>
<td>266</td>
<td>220</td>
<td>271</td>
<td>200</td>
<td>1156</td>
</tr>
</tbody>
</table>

Table 1. Sample Summary
Hypothetical Model

Figure 2. Hypothetical model of horizontal & vertical transfer students
## Results

### Table 2. *Exploratory Factor Analysis*

<table>
<thead>
<tr>
<th>Construct</th>
<th>No. of Items</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coursework Emphasis</td>
<td>4</td>
<td>.83</td>
</tr>
<tr>
<td>Assignment Capacity</td>
<td>4</td>
<td>.64</td>
</tr>
<tr>
<td>Class Projects</td>
<td>3</td>
<td>.60</td>
</tr>
<tr>
<td>Student-Faculty Interaction</td>
<td>4</td>
<td>.72</td>
</tr>
<tr>
<td>Institutional Support</td>
<td>4</td>
<td>.79</td>
</tr>
<tr>
<td>Campus Relationships</td>
<td>3</td>
<td>.69</td>
</tr>
<tr>
<td>Diversity</td>
<td>2</td>
<td>.79</td>
</tr>
<tr>
<td>Enhanced Learning</td>
<td>3</td>
<td>.52</td>
</tr>
<tr>
<td>Overall Satisfaction</td>
<td>2</td>
<td>.78</td>
</tr>
</tbody>
</table>

13. How would you evaluate your entire educational experience at this institution?
14. If you could start over again, would you go to the same institution you are now attending?
1 = Poor; 2 = Fair; 3 = Good; 4 = Excellent
### Results

Table 3. Comparison between Horizontal and Vertical Transfers in Student-Faculty Interaction, Institutional Support, Quality of Campus Relationships, Enhanced Learning Opportunities, and Overall Satisfaction.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Scale</th>
<th>Mean</th>
<th>df</th>
<th>p</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Horizontal</strong></td>
<td><strong>Vertical</strong></td>
<td><strong>t</strong></td>
<td><strong>df</strong></td>
</tr>
<tr>
<td>Student-Faculty Interaction</td>
<td>4-16</td>
<td>9.61</td>
<td>9.43</td>
<td>1.07</td>
<td>600</td>
</tr>
<tr>
<td>Institutional Support</td>
<td>4-16</td>
<td>9.09</td>
<td>9.00</td>
<td>.45</td>
<td>593</td>
</tr>
<tr>
<td>Campus Relationships</td>
<td>3-21</td>
<td>15.42</td>
<td>15.34</td>
<td>.42</td>
<td>609</td>
</tr>
<tr>
<td>Enhanced Learning</td>
<td>0-3</td>
<td>1.26</td>
<td>.92</td>
<td>5.1</td>
<td>572</td>
</tr>
<tr>
<td>Overall Satisfaction</td>
<td>2-8</td>
<td>6.18</td>
<td>6.26</td>
<td>-.92</td>
<td>630</td>
</tr>
</tbody>
</table>
Table 4. Sequential Multiple Regression Analyses Predicting Student Overall Satisfaction at a Public Research University by Transfer Type

<table>
<thead>
<tr>
<th>Variables</th>
<th>Horizontal (n = 338)</th>
<th>Vertical (n = 818)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SEB</td>
</tr>
<tr>
<td><strong>Background</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender: Male</td>
<td>-.19</td>
<td>.14</td>
</tr>
<tr>
<td>Age</td>
<td>.00</td>
<td>.02</td>
</tr>
<tr>
<td>Race: White</td>
<td>.33</td>
<td>.16</td>
</tr>
<tr>
<td>Grades</td>
<td>.00</td>
<td>.05</td>
</tr>
<tr>
<td>Father's Education</td>
<td>.02</td>
<td>.04</td>
</tr>
<tr>
<td>Major: STEM</td>
<td>.32</td>
<td>.14</td>
</tr>
<tr>
<td><strong>Academic Challenges</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coursework emphasis</td>
<td>.06</td>
<td>.0</td>
</tr>
<tr>
<td>Assignment capacity</td>
<td>.00</td>
<td>.03</td>
</tr>
<tr>
<td>Class projects</td>
<td>.01</td>
<td>.04</td>
</tr>
<tr>
<td><strong>Interactions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student-faculty interaction</td>
<td>.03</td>
<td>.03</td>
</tr>
<tr>
<td>Institutional support</td>
<td>.10</td>
<td>.03</td>
</tr>
<tr>
<td>Campus relationships</td>
<td>.18</td>
<td>.02</td>
</tr>
<tr>
<td><strong>Enriching Learning Opportunities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diversity</td>
<td>-.05</td>
<td>.04</td>
</tr>
<tr>
<td>Enhanced learning</td>
<td>.04</td>
<td>.07</td>
</tr>
<tr>
<td><strong>Adjusted R²</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* *p < .05, **p < .01, ***p < .001
Delimitations & Limitations

- One research university in the Midwest
- College seniors

- Not able to identify whether students stop out between institutions and how long it lasts.
- Not able to account for student academic activities and achievement prior to transfer.
- Cross-sectional design (a snapshot)
Conclusions

• What are the demographic characteristics of the vertical and horizontal transfers in the Midwestern research university?
  • Similar distributions in gender, age, ethnicity, major, enrollment status, and housing.
    – Gender: female
    – Age: 23 or younger
    – Ethnicity: white
    – Major: non-STEM
    – Enrollment status: full-time
    – Housing: within driving or walking distance
• Grade-A: Horizontal > Vertical (42% vs. 28%)
• Parents’ education-BA or beyond: Horizontal > Vertical (70% vs. 46%)
Conclusions

• To what extent do vertical transfers differ from horizontal transfers in Student-Faculty Interaction, Campus Relationships, Institutional Support, Enhanced Learning Experience, and Overall Satisfaction with the university?

• Student-Faculty Interaction, Quality of Campus Relationships, and Institutional Support:
  – Horizontal > Vertical but the differences were trivial

• Enhanced Learning:
  – Horizontal > Vertical and the difference was statistically significant

• Overall Satisfaction:
  – Vertical > Horizontal but the difference was trivial
Conclusions

What are the factors that predict level of vertical and horizontal transfer student overall satisfaction?

- **Horizontal Transfers:**
  - White
  - STEM majors
  - Coursework Emphasis
  - Institutional Support
  - Quality of Campus Relationships

- **Vertical Transfers:**
  - White
  - Grades
  - STEM majors
  - Coursework Emphasis
  - Assignment Capacity (-)
  - Institutional Support
  - Campus Relationships
  - Enhanced Learning (-)
Implications

- Do not assume all transfers have the same issues and/or challenges
- Consider socialization process of different types of transfers
- Create new student orientation programs and workshops for different types of transfers
- Assist vertical transfers to learn about the university expectations and become more familiar with the academic requirements.

Suggestions for future studies:
- Qualitative studies: explore the students’ transition experiences emphasizing on individual level
- Longitudinal studies: identify short- and long-term aspects of transitions
- Connect NSSE with academic transcript-level data
Questions

for additional information:

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515.294.7292
STEM Student Engagement & Satisfaction:
A Comparative Study of Community College Transfers and Native Students at a Four-Year Institution

Frankie Santos Laanan
Yi (Leaf) Zhang

February 4, 2011
Purpose of Study

• To better understand STEM and community college transfer students’ university experiences, engagement, and overall satisfaction at a research university in the Midwest.

• To identify differences between STEM and Non-STEM students regarding engagement and satisfaction.

• To identify differences between transfers and native students regarding engagement and satisfaction.

• To explore factors that influence STEM and transfer students’ overall satisfaction.
Research Questions

• What are the demographic characteristics of STEM transfers, STEM native students, non-STEM transfers, and non-STEM native students at a public research university in the Midwest?

• To what extent do the four groups of students differ in academic challenges, level of institutional support, student-faculty interactions, quality of campus relationships, and overall satisfaction with the university?

• What factors predict students’ overall satisfaction?
Methodology

• Definition
  – **STEM majors**: Biological Sciences, Engineering, Physical Science, Agriculture, Computer Science, Kinesiology
  – **Non-STEM majors**: Arts and Humanities, Business, Education, Professional, Social Science, and Others (including Communications, Family Studies, Natural Resources and Conservation, Criminal justice, Military Science, Public administration, Technical/vocational, etc.)
  – **Community college transfers**: seniors who indicated that they *only* attended a community or junior college prior to the university
  – **Native students**: seniors who did not indicate attending any vocational or technical schools, community or junior colleges, other 4-year colleges, and any other type of institutions.

• Sample

Table 1. Sample Summary

<table>
<thead>
<tr>
<th></th>
<th>STEM</th>
<th>Non-STEM</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC Transfer</td>
<td>334</td>
<td>467</td>
<td>801</td>
</tr>
<tr>
<td>Native Student</td>
<td>731</td>
<td>758</td>
<td>1489</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1065</strong></td>
<td><strong>1225</strong></td>
<td><strong>2290</strong></td>
</tr>
</tbody>
</table>
Hypothetical Model

College Environment

Demographics
- Gender
- Race
- Age
- Parents’ Education

Academic Challenges
- Grades
- STEM Status
- Transfer Status

Institutional Support

Relationships
- Student-Faculty Interaction
- Quality of Campus Relationship

Outcome
- Overall Satisfaction

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Results: Descriptive

Gender: Female

- STEM: 40%
- Non-STEM: 60%

Race: White (Non-Hispanic)

- STEM: 85%
- Non-STEM: 15%

Age: 23 and below

- STEM: 100%
- Non-STEM: 100%

Enrollment: Full Time

- STEM: 95%
- Non-STEM: 95%
Results: Descriptive

Father’s Education

Mother’s Education

www.cclp.hs.iastate.edu
Results: Descriptive

**Fraternity/Sorority**

<table>
<thead>
<tr>
<th></th>
<th>STEM</th>
<th>Non-STEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC Transfer</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>Native Student</td>
<td>4%</td>
<td>3%</td>
</tr>
</tbody>
</table>

**Residency: Dormitory**

<table>
<thead>
<tr>
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<th>Non-STEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC Transfer</td>
<td>2%</td>
<td>5%</td>
</tr>
<tr>
<td>Native Student</td>
<td>8%</td>
<td>6%</td>
</tr>
</tbody>
</table>

**Athlete**

<table>
<thead>
<tr>
<th></th>
<th>STEM</th>
<th>Non-STEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC Transfer</td>
<td>6%</td>
<td>2%</td>
</tr>
<tr>
<td>Native Student</td>
<td>4%</td>
<td>8%</td>
</tr>
</tbody>
</table>

**International Students**

<table>
<thead>
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<th>Non-STEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC Transfer</td>
<td>5%</td>
<td>3%</td>
</tr>
<tr>
<td>Native Student</td>
<td>7%</td>
<td>2%</td>
</tr>
</tbody>
</table>
Results: Descriptive

**STEM**

- Biological Science
- Engineering
- Physical Science
- Other

**Non-STEM**

- Arts and Humanities
- Business
- Education
- Professional
- Social Science
- Other

Other: Agriculture, Computer Science, and Kinesiology

Other: Communications, Family Studies, Natural Resources and Conservation, Criminal Justice, Military Science, Parks, Recreation, Leisure Studies, Sports Management, Public Administration, Technical/Vocational, and other fields.
Results: Descriptive

Grades

- STEM Transfer
- STEM Native
- Non-STEM Transfer
- Non-STEM Native

A: 20%
B: 40%
C and below: 40%
Table 3. *Comparison between STEM and Non-STEM students in Background Characteristics, Coursework Emphasis, Institutional Support, Student-Faculty Interaction, Quality of Campus Relationships, and Overall Satisfaction.*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Scale</th>
<th>Non-STEM</th>
<th>STEM</th>
<th>t</th>
<th>df</th>
<th>p</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coursework Emphasis</td>
<td>4</td>
<td>11.84</td>
<td>11.83</td>
<td>0.084</td>
<td>2270.000</td>
<td>0.933</td>
<td>-0.205</td>
</tr>
<tr>
<td>Institutional Support</td>
<td>4</td>
<td>9.09</td>
<td>9.08</td>
<td>0.098</td>
<td>2272.000</td>
<td>0.922</td>
<td>-0.204</td>
</tr>
<tr>
<td>Student-Faculty Interaction</td>
<td>4</td>
<td>9.56</td>
<td>9.17</td>
<td>3.867</td>
<td>2264.304</td>
<td>0.000</td>
<td>0.190</td>
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<tr>
<td>Campus Relationships</td>
<td>4</td>
<td>15.54</td>
<td>15.46</td>
<td>0.574</td>
<td>2282.000</td>
<td>0.566</td>
<td>-0.183</td>
</tr>
<tr>
<td>Overall Satisfaction</td>
<td>2</td>
<td>3.15</td>
<td>3.23</td>
<td>-2.551</td>
<td>2287.000</td>
<td>0.011</td>
<td>-0.131</td>
</tr>
</tbody>
</table>
### Results: Independent Samples $t$-test

Table 4. Comparison between *Transfers* and *Native Students* in Background Characteristics, Coursework Emphasis, Institutional Support, Student-Faculty Interaction, Quality of Campus Relationships, and Overall Satisfaction.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Scale</th>
<th>Mean</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Native</td>
<td>Transfer</td>
</tr>
<tr>
<td>Coursework Emphasis</td>
<td>4</td>
<td>11.86</td>
<td>11.78</td>
</tr>
<tr>
<td>Institutional Support</td>
<td>4</td>
<td>9.09</td>
<td>9.01</td>
</tr>
<tr>
<td>Student-Faculty Interaction</td>
<td>4</td>
<td>9.34</td>
<td>9.43</td>
</tr>
<tr>
<td>Campus Relationships</td>
<td>4</td>
<td>15.57</td>
<td>15.34</td>
</tr>
<tr>
<td>Overall Satisfaction</td>
<td>2</td>
<td>3.22</td>
<td>3.13</td>
</tr>
</tbody>
</table>
## Logistic Regression

### Table 6. Logistic Regression Predicting Student Overall Satisfaction with the University

<table>
<thead>
<tr>
<th>Variables</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
</tr>
<tr>
<td>Block 1</td>
<td></td>
</tr>
<tr>
<td>Gender: Female</td>
<td>0.701 *</td>
</tr>
<tr>
<td>Race</td>
<td>1.215</td>
</tr>
<tr>
<td>Age</td>
<td>0.955 *</td>
</tr>
<tr>
<td>Father's Education</td>
<td>0.674</td>
</tr>
<tr>
<td>Block 2</td>
<td></td>
</tr>
<tr>
<td>STEM Status: STEM</td>
<td>1.319</td>
</tr>
<tr>
<td>Transfer Status: Native</td>
<td>0.901</td>
</tr>
<tr>
<td>Grades</td>
<td>1.246 ***</td>
</tr>
<tr>
<td>Block 3</td>
<td></td>
</tr>
<tr>
<td>Coursework Emphasis</td>
<td></td>
</tr>
<tr>
<td>Block 4</td>
<td></td>
</tr>
<tr>
<td>Institutional Support</td>
<td></td>
</tr>
<tr>
<td>Block 5</td>
<td></td>
</tr>
<tr>
<td>Student-Faculty Interaction</td>
<td></td>
</tr>
<tr>
<td>Campus Relationships</td>
<td></td>
</tr>
<tr>
<td>Nagelkerke R Square</td>
<td>0.013</td>
</tr>
<tr>
<td>The Cut Value</td>
<td>0.88</td>
</tr>
</tbody>
</table>
Conclusions

1. What are the demographic characteristics of STEM transfers, STEM native students, non-STEM transfers, and non-STEM native students at the research university in the Midwest?

- Gender: 60%
- Age: 23 or younger
- Ethnicity: White
- Enrollment: Full-time
- Fraternity/sorority: few
- Grades: B (B+ and B-).

- STEM > Non-STEM
- Native > Transfer
- Fathers > Mothers

Parents’ Education:

- Major: Engineering vs. Business
2. To what extent do the four groups of students differ in academic challenges, level of institutional support, student-faculty interactions, quality of campus relationships, and overall satisfaction?

- **Student-Faculty Interaction:**
  - Non-STEM > STEM
  - Non-STEM Transfer > STEM Transfer
  - STEM Transfers had the lowest mean score (9.16 on a 4-16 scale)
  - Non-STEM Transfer had the highest mean score (9.60)

- **Overall Satisfaction:**
  - Satisfied
  - STEM > Non-STEM
  - Native > Transfer
  - Non-STEM Transfers had the lowest score (3.09 on a 1 to 4 scale)
  - STEM Native students had the highest score (3.25)
3. What factors predict students’ overall satisfaction?

- **Four measures** are associated with higher likelihoods of being satisfied with the institution.
- **Female students** and **STEM majors** were more likely to be satisfied with the institution.
- Students who experienced higher level of **institutional support** and reported better **relationships** with faculty, staff, and peer students were more likely to have a higher level of overall satisfaction with the institution.
Implications

• Implications:
  – Create new student orientation programs and workshops for different types of students
  – Provide support to help students succeed academically and thrive socially
  – Strength STEM programs
  – Provide additional academic support to transfers

• Suggestions for future studies:
  – Qualitative studies: explore the students’ college experiences emphasizing on individual level
  – Longitudinal studies: identify short- and long-term aspects of students’ engagement
  – Connect NSSE with academic transcript-level data
Questions

For Additional Information:

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