“Only Connect”: A Mixed Methods Study of How First-Year Students Create Residential Academic and Social Networks

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Introduction

- First-year college students: new environment, need to create academic/social relationships
- College administrators structure environments where students are more likely to create certain relationships (e.g. learning communities)
- Little is known about how these specific “networks” of relationships facilitate educational outcomes

Inside the Box

- Learning Community definitions & research
  - Participation in LCs is generally associated with positive educational outcomes, although effect sizes may be relatively small
- Social Network Analysis
  - Homophily can be a predictor of tie formation
  - Position in network associated with outcomes

Theoretical Framework

- Academic and/or Social Integration (Tinto, 1993)
  - If students are connected to the institution academically and/or socially, they will be less likely to leave it
- “Involvement” & “Engagement” as a proxy for learning & a measure of student success (Kuh, Astin, etc.)

Theoretical Framework
Research Questions

- What is the structure of students’ residential academic and social networks? Why? What relationship does structure have with a learning community environment?
- What institutional structures influence network formation?
- Are students' positions in their residential networks related to educational outcomes? (first-semester GPA & second-semester involvement)

Methods

- Case study: two residential communities at one institution (mid-size private in the NE) over 1.5 years
  - Arts-themed learning community (“ProArte”)
  - Random-assignment residence hall floor (“Tyler 2”)
- Mixed methods (“triangulation”)
  - Paper surveys
  - Individual Interviews
  - Participant observation

Methods: Surveys

- Two paper surveys (Fall 2006, Spring 2007)
- Based on common network questions, roster style
- Response rates: 92% and 85%
- 76 LC students
- 64 random-assignment students

Methods: Qualitative

- Individual Interviews (30-60 minutes each)
  - 45 in Fall 2006
  - 42 first follow-up in Spring 2007
  - 20 second follow-up in Fall 2007
- Participant Observation
  - Floor meetings, field trips, classes, hanging out
- My Identity

Methods: Research Population

- Generally reflected demographics of institution (Qualitative)
- 50% men; 50% women (50% / 50%)
- Race/Ethnicity:
  - 72.1% White (75.1%)
  - 15.7% Asian/Asian-American (15.9%)
  - 6.4% Latino (4.5%)
  - 5.7% Black (4.5%)
- 80% First-year students (82%)

Methods: Analysis

- Quantitative: survey data computerized and analyzed using Ucinet1, NetDraw2, & SAS
- Qualitative:
  - Interviews recorded and transcribed
  - Field notes typed
  - Data categorized into 235 codes
  - Analyzed for themes
- Brought types of data together for joint analysis

1 (Borgatti, Everett, & Freeman, 2002)
2 (Borgatti, 2002)
Methods: Social Network Analysis

- "Network": actors + relations
- Actors or Nodes
- Relational tie
- Tie strength/value
- Directionality
- Sociogram

Density as an Indicator of Student Integration

- Measures the amount of student interaction in a particular community
- Density = reported / possible ties (normalized to account for differential network size)
- Symmetrized & dichotomized ties
- Greater density = greater integration

Results: Social, Fall 2006

- ProArte denser than Tyler 2
- Densities: ProArte – 0.1740  Tyler 2 – 0.1587

Results: ProArte Social Fall 2006

- Most of my friends are people in the [ProArte] learning community, like right now. There was a lot of forced interaction at first, and then we all just kind of made friends anyway. … I guess it was a little necessary, when we were first starting out here, it was, I mean at least the girls' floor was a family. … we were almost like a sorority, even though it wasn't really a sorority, it's just that we were all there together, doing art. It was cool.
- Cindi (November 10, 2006)
- Georgina (November 2, 2007)

Results: Tyler 2 Social Fall 2006

- The "Lounge Group"
- Feeling peripheral

Results: Academic, Fall 2006

- ProArte denser than Tyler 2
- Academic networks less dense than social networks
- Densities: ProArte – 0.0853  Tyler 2 – 0.0497
Results: Tyler 2 Academic Fall 2006

- Studying with others doesn’t work
- A few with compatible majors worked together

Results: ProArte Academic Fall 2006

- Studying via LC courses
- Role of space
- Competition / feedback in arts majors

Results: Social Networks Spring 2007

- ProArte denser than Tyler 2
  ProArte – 0.1449  Tyler 2 – 0.1215
- Both networks less dense than their respective Fall social networks (Tyler 2 not significant difference)

Results: Academic Networks Spring 2007

- ProArte density decreased (0.0505), while Tyler 2 density increased (0.0600, not significant)

Results: Change Over Time According to Students

Social change:
- Set group of friends—“real friends”
- Too busy to make new friends
- Larger groups fractured

Academic change:
- ProArte—need to focus on profession/major
- Tyler 2—understand academic expectations, need to study more→ use friends on floor
Results: Change Over Time
ProArte Multiplex Ties
- Fewer multipurpose (red) ties
- More divided by academic (green) and social (blue)

Results: Change Over Time
Tyler 2 Multiplex Ties
- More multipurpose (red) ties
- More academic only (green) in spring than in fall

Discussion
- In this study, LC (even in a simple form) seemed to influence the speed of academic integration
  - LC: academic & social ties in first semester, then emphasis on major in second semester (no LC courses)
  - Tyler 2: social ties in first semester, turn to multiplex ties in second semester, emphasis on major in second year

Possible Role of Homophily in Network Formation
- “Homophily” = being “like” someone (e.g. same gender, race, major, class year)
- Do students create academic or social relationships based on homophily? If so, what kind(s) of homophily?
- Analysis: MRQAP regression (matrices predict a resulting matrix)

Results: Homophily

<table>
<thead>
<tr>
<th>MRQAP Analysis Using Homophily to Predict Existence of Network Ties in the Learning Community: Fall 2006</th>
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</thead>
<tbody>
<tr>
<td><strong>Variable</strong></td>
</tr>
<tr>
<td>--------------------</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Race</td>
</tr>
<tr>
<td>Income</td>
</tr>
<tr>
<td>Major</td>
</tr>
<tr>
<td>Class Year</td>
</tr>
<tr>
<td>Learning Community Member</td>
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<tr>
<td>Enrolment in LC Music Appreciation</td>
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<tr>
<td>Enrolment in LC Writing</td>
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<tr>
<td><strong>R²</strong></td>
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</tbody>
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Summary of Results: Homophily

<table>
<thead>
<tr>
<th><strong>Learning Community</strong></th>
<th>Social Ties</th>
<th>Academic Ties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender, major, class year, LC membership</td>
<td>Gender, major, LC writing course</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Random-Assignment Floor</strong></th>
<th>Social Ties</th>
<th>Academic Ties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Race, class year</td>
<td>Major, class year, gender</td>
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Changes in second semester:
- For LC, gender and class year became negative in academic model
- For RA Floor, gender not significant in academic model

Small r² value
Summary of Results: Institutional Factors

- Major socialization & decision-making
  - personal & professional identity
  - anxiety
  - other influences (family, culture, finances)
  - navigating major & other interests
- Some evidence institutional regulations constrained ties with non-majors

Results: Network Position and Fall 2006 GPA

- Academic closeness centrality not predictive of GPA
- Higher GPA:
  - female, second-year and above, LC writing course
- Lower GPA:
  - HS GPA below 3.5

Results: Network Position and Spring 2007 Campus Involvement

- Social closeness centrality predictive of campus involvement
- Greater involvement: second-year and above, sciences
- Less involvement: HS GPA below 3.5

Conclusions

- The learning community appears to facilitate a greater number of academic and social ties among students during the first semester
- Some evidence suggests restrictive major requirements increase in-group interactions at the expense of out-group connections
- Having an initially central network position is related to having higher second-semester campus extracurricular involvement

Limitations & Future Directions

- Not generalizable
- Student-reported outcomes; not able to use persistence as a dependent variable
- Future study with other student populations, institution types, learning community types, and other student communities; administrative structures
- Student interactions across diversity
- Development of SNA as an assessment tool

References


National Survey of Student Engagement. http://nsse.iub.edu/

