Social Networks in LEAP

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Purpose of Presentation

• To report and discuss findings from an ongoing social network study of classroom community in the LEAP Program.

• Data was collected fall 2010 – spring 2011

• Findings are preliminary!
Outline

• **Part 1:** The LEAP Program

• **Part 2:** Classroom Community as Social Network

• **Part 3:** Findings from the Study
Part 1: The LEAP Program
The Structure of LEAP

• An optional two-semester learning community for entering students

• Students stay with same cohort and professor for two successive semesters

• The two courses fulfill three graduation requirements
Key Features of LEAP

• Exploration, special interest, or pre-professional versions, 14 in all
• Linked courses in library research, writing, major selection, and service learning
• Partnerships with University College and other college advisors
• Partnerships with community
• Peer Advisors
Student Demographics: Enrollment
LEAP Enrollment by Gender

- 2007 (n=783)
  - Females: 47.3%
  - Males: 52.7%
- 2008 (n=793)
  - Females: 45.8%
  - Males: 54.2%
- 2009 (n=1069)
  - Females: 47.7%
  - Males: 52.3%
- 2010 (n=1107)
  - Females: 46.3%
  - Males: 53.7%
- 2011* (n=934)
  - Females: 47.9%
  - Males: 52.1%
LEAP Students of Color

2007 (n=783) 67.9%
2008 (n=793) 66.6%
2009 (n=1069) 68.2%
2010 (n=1107) 62.7%
2011* (n=934) 63.3%

White
Non-White

32.1%
33.4%
31.8%
37.3%
36.7%
Previous research has shown:

Compared to their non-LEAP demographic twins, LEAP students:

- Have higher first-year GPA’s
- Attempt and complete more credit hours
- Are retained at a higher rate
- Graduate at higher rates at both 4- and 6-year marks

(Data from 1999-2006)
Logistic Regression Analysis showed:

• Male LEAP students were 11% more likely to return for their second year.

• Female LEAP students were 39% more likely to return for their second year.

(Data from 1999-2006)
What features of LEAP pedagogy contribute to these gains?

Could it be classroom community?
Part 2: Classroom Community as Social Network
Classroom Community

• “We know that involvement matters” (Tinto, “Classrooms as Communities,” 1997)

• Learning communities offer a way to spark student involvement in classrooms.

• How should we understand the community in “learning community”? 
What is Community?

**Community**: “a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members’ needs will be met through their commitment to be together” (McMillan and Chavis, 1986)

- Sense of belonging
- Trust
- Interdependence
- Interactivity
- Shared values
- Common expectations
- “…members of strong classroom communities have feelings of connectedness” (Rovai, 2002)
Studying Classroom Community

- Most studies rely on surveys of student impressions/attitudes.

- **Strengths**: surveys capture the subjective component of community—“sense of belonging.”

- **Weaknesses**: surveys neglect the structural component of community—connections.
Network Analysis: An Alternative

• Roots in European sociology: Durkheim’s study of suicide.

• Mapping relationships offers insights into the group context of individual performance.

• “We expect SNA to become an increasingly central part of the sociology of education and bring about a paradigm shift from methodological individualism to methodological transactionalism” (McFarland, Diehl & Rawlings, 2011)
Sociogram (directed ties)
Sociogram (undirected ties)
Class Friendship Network, LEAP 1100–5

Node color by gender
Density = 0.162, Centralization = 0.484
Transparent nodes indicate missing data
Class Friendship Network, LEAP 1100–5

Node size by connections
Node color by gender
Density = 0.162, Centralization = 0.484
Transparent nodes indicate missing data
Node size by connections, Node color by gender
Density = 0.156, Centralization = 0.909
Transparent nodes indicate missing data
Class Friend & Acquaintance Network, LEAP 1100–5

Node size by connections
Node color by gender
Density = 0.267, Centralization = 0.789
Transparent nodes indicate missing data
Part 3: Findings from the Study
Research Questions

1. How does network structure change in LEAP classes through the year?

2. Is network structure associated with student performance? In this study we focused on course satisfaction.
Data

• Fall semester 2010: 17 classes.

• Spring semester 2011: 15 classes.

• Some classes were excluded due to low response rate. (The required response rate for accurate network mapping is about 75%.)
LEAP Class Density by Semester

Fall–Spring Change is Significant (p<.05)
Class Centralization by Semester

Fall–Spring Change is Significant (p<.05)
Typical Fall Semester LEAP Course

Friend & acquaintance network (n = 18)

Node scaling and color by connections

Density = .3

Centralization = .47

The PA is clearly central (large green node)
Same Class, Spring Semester

Density = .56

Centralization = .43

Peripheral students have become more connected

The PA is still central but other leaders have emerged

Connections are more evenly distributed
Summary of Findings

1. Significant social structural changes occur during the LEAP year:
   - Density increases
   - Centralization decreases

2. Higher class density in the spring semester is associated with higher course satisfaction.
   - Evaluations do not go up in the spring.
   - Rather, density’s predictive role goes up.
Discussion

1. The network changes across semesters are consistent with the changing role of the peer advisor.

2. The relationship between density and course satisfaction could be explained with the notion of information flow: students learn more in densely connected classrooms.
Future

• Low statistical power in this study. Need to use individual-level data rather than group averages!

• Combine network analysis with ethnographic research on classroom community.

• Explore the use of graphs for teacher development.

• Use graphs to help recruit and select PAs.
Questions?

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