Twitter Anyone?

Twitter: @frankjay808
Social Networking
Easily get connected with anyone
Facebook, LinkedIn, Twitter and Google+ very common to educators
Any comments and questions can be Tweeted 
#ISTE13TSI

Teaching Science As Inquiry – Aquatic Science (TSI-A)

- 3-year project to promote teaching science as inquiry (TSI), IES Grant
- Enhance communication and collaboration amongst the participating teachers
- Provide a mechanism by which resources could be shared

Purpose of Study

- Design an online learning community
  - vBulletin, Drupal
- Focus on interaction and support without CRDG faculty and staff prompting
  - Science teachers trained in various science curricula of CRDG
  - Potential advice for facilitators behavior and characteristics

Teacher cohort groups

Curriculum Research & Development Group (CRDG)

A Science Online Learning Community: Analysis of Teacher Social Networking
Thanh Truc T. Nguyen Francisco V. Jumawan Curriculum Research & Development Group College of Education University of Hawai'i at Mānoa
ISTE 2013 San Antonio, TX June 26, 2013
Communities of Practice

“A group of people who interact, learn together, build relationships, and in the process develop a sense of belonging and mutual commitment” – Wenger, 2002

Research

teachers’ self-perceived use

the amount of use

Activity comment comparisons between preliminary and subsequent groups

(October 2010 to July 2012)

<table>
<thead>
<tr>
<th>Type of Comment</th>
<th>Preliminary N=192</th>
<th>Subsequent N=241</th>
<th>Subsequent N=492</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>95%</td>
<td>48%</td>
<td>64%</td>
</tr>
<tr>
<td>Teacher-teacher</td>
<td>5%</td>
<td>36%</td>
<td>35%</td>
</tr>
<tr>
<td>Technical</td>
<td>16%</td>
<td>1%</td>
<td></td>
</tr>
</tbody>
</table>

Inter-rater reliability: Kappa = 0.89 (p<0.000), 95% CI (0.85, 0.96); Kappa = 0.86 (p<0.000), 95% CI (0.83, 0.89).

Use of OLC

• 49,587 visits to the current website

Social Network Theory

• Social ties between actors
  – Daly, 2012
• Analyzed through its explanatory mechanisms of their ties through structure or how resources flow
  – Borgatti & Foster, 2003

Theoretical foundation

• Actors in a social network are interdependent rather than independent
• Relationships are regarded as conduits for the exchange or flow of resources
  – Information, knowledge, materials
• Patterns of relationships may act as constraints or opportunities
Social Network Analysis

- Embedded patterns of relations within and between groups
- Systematic collection and analysis of empirical data
- Graphic imagery as part of its tools
- Statistical inference using network measures

Previous SNA Research

- Revealed influences in organizational performance, socialization, communication, knowledge, transfer, innovation, productivity
- Created strong ties within and across units – initiate and sustain successful large-scale change efforts
- Identified ties between sub-groups – facilitate knowledge transfer, cooperative relationships, and exchange of novel information
- Distinguished dense lateral ties – increase “absorptive capacity”

SNA in Education Research

- Invokes network-related theories and ideas
- Offers another way to theorize and explore and measure
- Provides language, perspective and empirical evidence to describe the structure of networks, nodes, and outcomes
- Complements theoretical approaches

The TSI Aquatic Science OLC

Data Sources

Online Learning Community - Drupal
Requested analytics
Mid program survey, post program survey
- 14 items
Looking for

- Homophily
  - Extent to which ties are formed with those similar and dissimilar
- Reciprocity/Mutuality
  - Extent to which ties are reciprocated
- Propinquity
  - Tendency to have more interaction due to geography

" Actors"

N = 36

N_{Kauai} = 16

N_{Oahu} = 15

N_{Facilitators} = 5

Images from http://www.soest.hawaii.edu

Teacher cohort groups

Technical Demographics

High comfort level with technology (M = 8.48, SD = 2.17)

All indicated they use Internet on a daily basis and use it for work purposes

Data from OLC Survey

<table>
<thead>
<tr>
<th></th>
<th>Mid</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>To interact</td>
<td>6.57 (±2.40)</td>
<td>7.78 (±1.69)</td>
</tr>
<tr>
<td>For course activities</td>
<td>8.32 (±2.16)</td>
<td>8.61 (±1.69)</td>
</tr>
<tr>
<td>For curriculum content</td>
<td>8.21 (±2.21)</td>
<td>8.46 (±1.60)</td>
</tr>
<tr>
<td>Recommend to others</td>
<td>7.54 (±2.33)</td>
<td>8.46 (±1.71)</td>
</tr>
</tbody>
</table>

1 = not at all, 10 = yes, frequently

Correlations

- No significance between level of comfort on the Internet and out degree
  \[ r = -0.32, n = 28, p < 0.093 \]
- No significance between level of comfort on the Internet and in degree
  \[ r = 0.093, n = 28, p < 0.637 \]
Paired sample t-test

<table>
<thead>
<tr>
<th></th>
<th>t-value</th>
<th>df</th>
<th>p</th>
<th>Eta squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>To interact</td>
<td>-3.5</td>
<td>27</td>
<td>.001*</td>
<td>.037</td>
</tr>
<tr>
<td>For curriculum content</td>
<td>-1.02</td>
<td>27</td>
<td>.316</td>
<td>.322</td>
</tr>
</tbody>
</table>

The TSI Aquatic Science OLC

3+ comments

Teacher K11 Ego Network

TeacherO2 Ego Network
Facilitator Network

Conclusions

- Facilitators are maintaining good periphery status
  - 35% interactions are teacher-teacher interactions
- Longer exposure to the site significantly increases likelihood to continue interaction
- Cannot assume comfort on Internet will lead to increased interaction

Future Directions

- Data needs for more SNA
  - Have the teachers taken courses together in teacher preparation programs?
  - Do they teach at the same school as another teacher?
  - Have they attended a workshop with another teacher in this workshop?
  - Do they consider another teacher in this workshop a friend?
- Facilitator perceptions of teacher interactions in the face-to-face workshop

Future Directions

- Is there a relationship between number of “hits” in the OLC and mastery of content?
- Can the pre-post gains in content mastery predict use of the OLC?
- Is there a temporal factor to who receives (in degree) and sends (out degree) comments?

Thank You!

Questions?

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Truc Nguyen, nguyen@hawaii.edu

We want your feedback!
There are 3 ways to provide feedback on this session.

Mobile App
Mobile Website
Conference Website