Case Study of Interdisciplinary Student Research Teams:

Factors, Outcomes, And Lessons Learned

Brent T. Ladd, Director of Education
Center for Science of Information, Purdue University
Create a Community of Practice of young scholars around the emerging field of Science of Information
### Pathways for Student Collaboration

#### Informal
- CSol Member in our Center Network
- Conferences
- Summer Schools
- Annual Center Meetings

#### Formal
- Faculty “seed” Projects
- Co-Advisors
- Student Training Workshops
- Student-led Research Project Teams
Guiding Questions

• Is there a significant relationship between community-based collaboration and publication productivity?

• Do factors of funding, gender, length of Center membership, participation level, or university influence publication productivity or rate of collaboration?

• What can be learned from student research team interactions, and their ability to address interdisciplinary questions?

• To what extent can a community of young scholars with large geographic distribution productively collaborate?
Percentage of Graduate Student Members Engaged in Community-based Collaboration
Factors included in the model for influence on publication productivity

- Community-based collaboration
- Gender
- Funding source
- Participation level
- Time spent as a Center member
- University
Community-Based Collaboration on Research Publications?

Mean Annual Publications

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Yes</th>
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<tbody>
<tr>
<td>Mean</td>
<td>2.04</td>
<td>2.81</td>
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*F (1, 176) =11.89, p < 0.001

GLMM: BIC=473.87, random intercepts, Co-var. structure AR(1) Rho p=0.516, REML, Sequential Bonferroni
# Pathways for Student Collaboration

**Informal**
- CSoI Member in our Center Network
- Conferences (poster sessions)
- Summer Schools
- Annual Center Meetings

**Formal**
- Faculty Projects
- Co-Advisors
- **Student Training Workshops**
- **Student-led Research Project Teams**
Training Workshop: Data Science & Interdisciplinary Research Teams
• Active learning/ Problem based
• Their own research data
Manual: 286
Code: 276
Professional Development Support

• NSF style proposal
• Roles of each participant
• How does it synergize with their graduate thesis goals
• Blessing and guidance of their respective major professors
• 6K per team for travel expenses per year
Year-Long Student-Led Teams

- 7 annual workshops
- 14 Student Research Teams
- 21 Universities
- 22 Departments
- 50/50 F/M ratio

Agronomy, Anthropology, Behavior and Brain Science, BioEngineering, Biology, Chemical Engineering, Civil Engineering, Computational Biology, Computer Engineering, Computer Science, Ecological Science and Engineering, Electrical and Computer Engineering, Electrical Engineering, Environmental Engineering, Forestry and Natural Resources, Geology, Languages, Mathematics, Medical, Physics, Sociology, Statistics
Student-Led Research Team Productivity

• 14 Student-Led Research Project Teams
• 44 Co-authored Conference Posters & Presentations
• 15 Co-authored Journal Papers
after Zeigler (1990), Jensenius (2012)
“Having access to the Center faculty and students, and participating in the workshops and schools benefited me greatly. It helped me to ask new and better questions about my own thesis topic, and gave me the chance to learn and work with other disciplines.”
Lessons Learned

• Significant positive relationship exists between Center community-based collaborations by graduate students and their scholarly publication productivity

• Given a range of informal and formal pathways that encourage collaboration – graduate students in our community demonstrate capacity to successfully engage in interdisciplinary research

• Given even small amounts of travel and professional development support, our graduate students have successfully formed a community of practice (despite being geographically dispersed)

• This collaborative approach developed during graduate study appears to continue as they matriculate to post-doctoral and faculty positions
Questions?

Brent Thomas Ladd, Dir. of Education
Center for Science of Information
Computer Science Department
Purdue University
West Lafayette, Indiana, U.S.A.
laddb@purdue.edu
https://soihub.org

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Additional Slides
Mean Annual Publications vs Years of Center Membership

- <=1: 2.04
- 1 to 2: 2.28
- 2 to 3: 2.44
- >=3: 2.90

*n=256, F=3.25, p=0.023
Collaboration as Dependent Factor

• None of the independent factors measured revealed any significance in the model
Advancing Beyond Data to True Insight

Wisdom
Wisdom builds on our past to give us new understanding and, by incorporating values, judgment and experience, the ability to predict.

Understanding
Understanding is cognitive and analytical. It is the process by which one can synthesize new knowledge from what was already known.

Knowledge
Knowledge is information aggregated to a point where it has meaning and purpose – the how.

Information
Data becomes information when it has meaning and we understand context and relationship – the who, what, where, and when.

Data

Relevance

Relationship
