



Research Question: What relationships, if any, exist between participants' place in the network and the impacts they report from participating in the community?

Background & Theory

- A faculty online learning community (FOLC) typically involves about ten faculty who meet online regularly to discuss their work and learn from each other¹
- The Next Generation Physics and Everyday Thinking (Next Gen PET) FOLC was designed for physics faculty using the Next Gen PET curriculum to teach physics to pre-service elementary teachers²
- Social network analysis (SNA) involves using quantitative methods to characterize a group of people by analyzing connections between them³

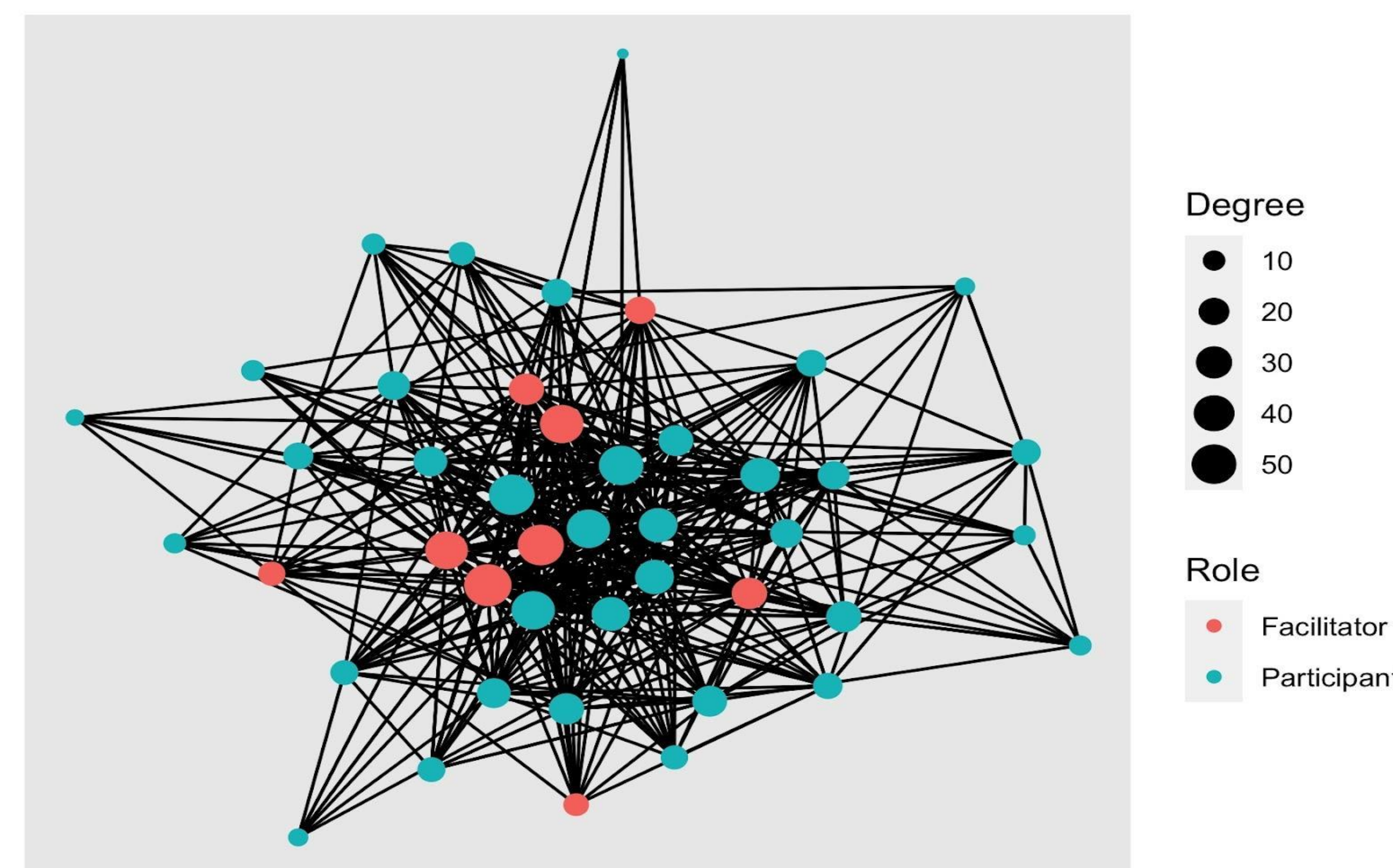
Methods

- Participants completed an SNA survey in which they reported conversational or collaborative connections with other participants and a final survey that included questions that sought to measure the extent and types of impacts they experienced from participating in the FOLC
- 37 out of 62 invited participants (past and present) completed both surveys
- We represented the networks (at right) and calculated each person's closeness, or their average distance to all other people in the network as measured by connection jumps³
- We combined related items on the final survey into 'impact composites' or ICs (Table 1)
- We calculated Bayes factors, which indicate the likelihood of one model versus another, for each IC or combination of ICs as a model of closeness versus average closeness as a model of closeness⁴

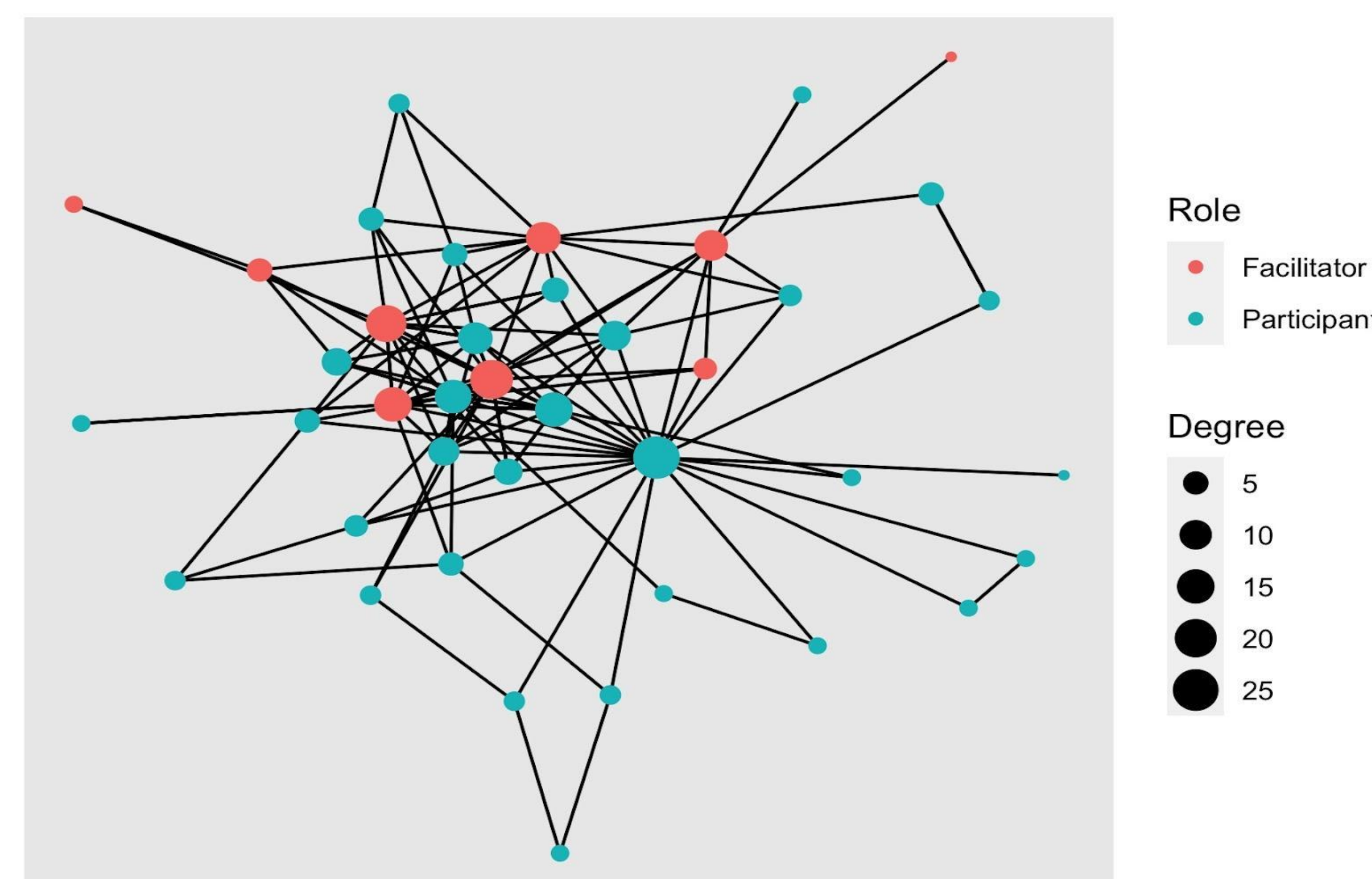
Composite name	Example item (rate agreement unless otherwise noted)
Attitude toward participating in cluster meetings (AP)	The [cluster meetings] were valuable to me.
Teaching impacts (TI)	I have gained confidence in my teaching.
Community benefits (CB)	I have gained a community which supports my teaching practice.
Sense of community (SC)	I can trust people in the Next Gen PET FOLC.
Preparedness to teach Next Gen PET (PT)	Structure your course using the Next Gen PET curriculum [rate preparedness]
Self-efficacy for instructional leadership (SE)	Mentor a faculty member who is new to teaching Next Gen PET [rate confidence]
Ability-related concerns (ARC)	I am concerned about how to organize my course using the Next Gen PET curriculum.
Student-related concerns (SRC)	I am concerned about students' attitudes toward the Next Gen PET curriculum.
Collaboration-related concerns (CRC)	I would like to help other faculty in their use of the Next Gen PET curriculum.
Refocusing-related concerns (RRC)	I would like to revise Next Gen PET's instructional approach.

Table 1

Conversation Network



Collaboration Network



Results

We found that 'Self-efficacy' was over eight times more likely to predict a person's closeness in the conversation network than a model of average closeness only (Table 2), and the combination of 'Teaching impacts,' 'Community benefits,' and 'Self-efficacy' was the most likely model of closeness for the collaboration network (Table 3)

Model	Bayes factor
SE	8.37
TI + CB + SE	5.04
TI + SE	4.97
PT + SE	3.64
TI + CB + PT + SE	3.50

Table 2

Model	Bayes factor
TI + CB + SE	20.0
AP + TI + CB + SE	14.4
AP + CB + SC + SE	12.9
TI + CB + SE + SRC	11.8
AP + TI + CB + SC + SE	11.1

Table 3

Conclusions

- **Participants that were more closely connected with others saw greater impacts in their self-efficacy, teaching, and perhaps other areas**
- These results may help the designers of future FOLCs decide how to use time and resources to prioritize certain impacts for participants
- This analysis is limited by the size of our dataset and the fact that it does not represent the complete FOLC network
- We plan to extend this study qualitatively by analyzing interview and survey data of a few participants that were especially central or peripheral in the network

Acknowledgments and References

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