Evaluation Report

Social Networking: Scientists and Educators Communicating

August, 2009 COSEE-OLC Event:
Celebrating Summer and Ocean Science

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Introduction

On Augusts 9, 2009, COSEE-OLC sponsored an event at the Seattle Aquarium, *Celebrating Summer and Ocean Science*. Among the 194 people who attended were a number of self-identified scientists (n=25) and educators (n=17) and members of the local (Puget Sound) marine volunteer community (n=118).

Rationale/Background

COSEE-OLC has been engaged for 4 years in building a community of learners, including scientists, educators (formal and informal), the general public, and volunteers from the local marine community. The focus of this rising community has been bringing scientific information and research about the oceans and marine environment to the public.

One goal of this event was to support and encourage scientists and educators to talk to each other, as well as to the marine volunteer community (MVC). In an effort to at least partially measure and better understand the dynamics of that emerging community, it was decided to quantitatively measure their conversations. These conversations can be viewed as an indicator of underlying relationship dynamics. "Social networks form as individuals establish and maintain relationships." (Johnson 2000) Conversations precede and imply a relationship, however slight, ands these can build into a social network, even a community.

Many questions came up as social networking analysis was discussed as an opportunity to better understand the nascent COSEE-OLC community. Our questions include:

- Are scientists and educators talking to each other, or only to their own peers?
- What are they talking about?
- How can COSEE-OLC increase the quantity and quality of those conversations and interactions?
- What are benefits to the COSEE network of social networking?

Research

Social network (SN) analysis is a relatively young field, with statistical analysis and topological mathematics becoming paired to sociological observation and measurements in the mid-twentieth century. (Wasserman 1994) Additionally, software tools such as *Ucinet* present a pictorial representation of relationships as connected dots. These tools quantitatively analyze relationships or ties between individuals (or groups) and highlight the connections, which then allow comparisons and further analysis.

Rob Cross (Cross 2002) discusses how collaboration is increasing vital within an organization to solve problems and find information, but how challenging it is to get people from different background and disciplines to integrate and collaborate. Working with scientists and educators over the last 5 years with COSEE-OLC, and noting the challenges along the way, reinforces that finding.

SN analysis applied specifically to scientists recently has led to some interesting discoveries.

- Emergent network is as valid an organizational structure as an imposed hierarchy for research management. (Hasan 2006)
- Social networks are important for finding potential collaborators as well as other functions. (Schleyer 2008)
- Collaboration…becomes ever more crucial to project success (Ibid) as scientific enterprises become ever more complex.
- … social interactions among researchers have positive effects on a scientist's productivity and that there is a U-shaped relation between the size of a scientific network and individual productivity. (Carillo 2007)

Findings

As part of the evening's activities, participants socialized around a 60 minute poster session, and were asked to keep track of their conversations, including who they talked to and the topic. (See Appendix for the form.) Of the 194 attending, 103 filled in conversation grids, a 53% return rate. The average number of conversations among the 103 surveys was 4.6. These conversations were scored by the evaluators and categorized whether the conversation was personal, scientific, educational, or both educational and scientific.

Science conversations	155	32%
Education conversations	173	36%
Both science and education conversation	25	5%
Personal, other, or no conversations	125	26%
All conversations	**478**	**100%**

Table 1. Conversations among 194 attendees were mostly about education or science.

From the 194 attendees, almost 500 conversations were analyzed for content and connection. Each conversation was rated to be about education, science, both education and science, or personal. Those who self-identified on their registration as scientist or educator were analyzed separately as well.

Among all attendees, conversations were almost equally rated between those focused on education (32%) and those focused on science (36%.) Most of these conversations (65%) were from the marine volunteer community, who made up the majority of those attending.

For those who identified themselves as scientists, science conversations dominated. Their conversations were rated as science related for 47% of the incidents recorded.

Scientists had few conversations rated educational or personal (17% and **19%)**. Of the 53 rated conversations scientists had, 13 (25%) were with other scientists. The population of scientists attending, who identified themselves at registration as scientists, was very small (n=25) so these numbers may be viewed with some skepticism.

Although educators had conversations about science 25% of the time, scientists' conversations about education occurred slightly less often at 17% of the time. For those calling themselves educators, education conversations were the most common, although not as strongly as the scientists' conversations within their own silos. Because of the very small number

of those who identified themselves as educators at registration (n=17) other comparisons are impossible.

Personal conversations were higher among educators and the MVC than scientists (30% vs. 19%) but the small sample size makes these numbers very uncertain for comparisons. The MVC had conversations rated personal 28% of the time, which is similar to the educators.

The marine volunteer community (MVC) participants had numerous conversations (n=325), almost equally split among science and education (37% and 33%) with personal conversations lower at 28%.

MVC attendees engaged in an average of 4.6 conversations (of all kinds) per person, compared to the 2.12 average of conversations per scientist. Educators had an average of 2.6 conversations per person.

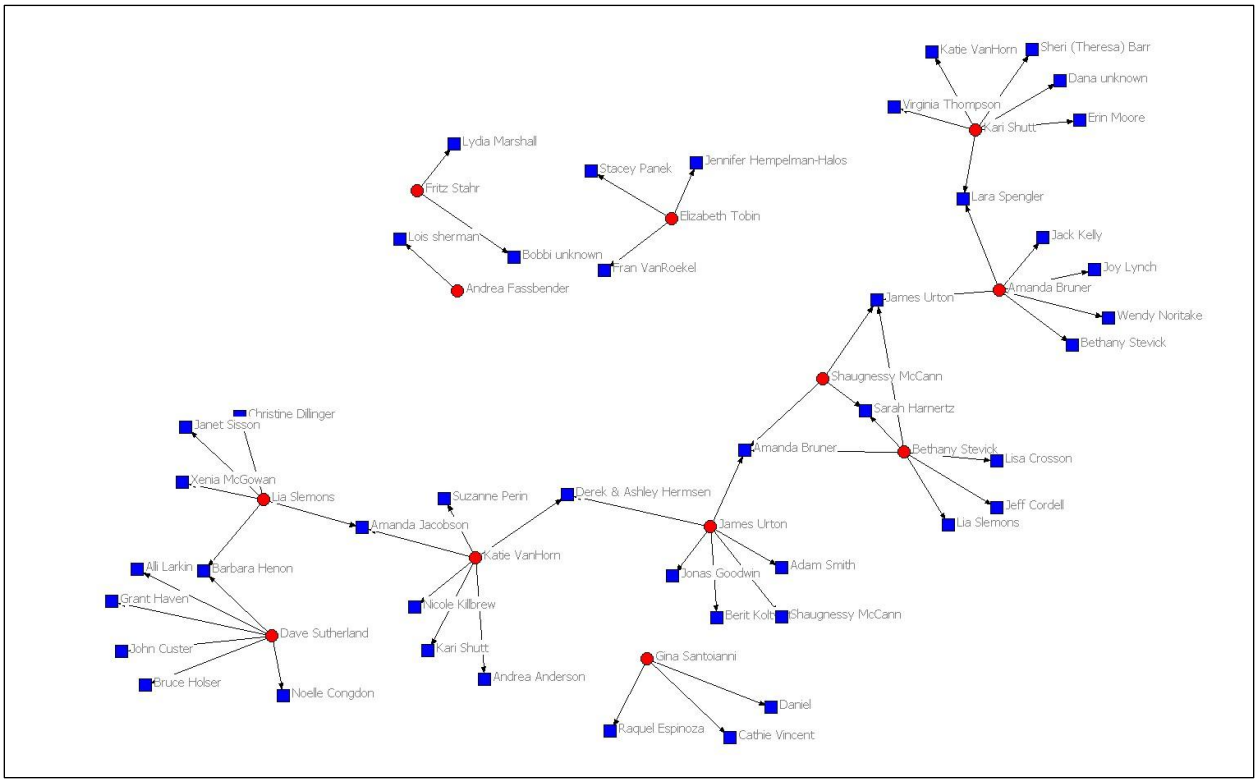


Figure 1. A sample of how some attendees connected to others through conversations.

Conclusions

This tracking is a fascinating yet ultimately limited tool for analyzing the social networking which is taking place so frequently with COSEE-OLC. It does appear that each group (scientists, educators, MVC) talks to other groups with some variations in principle conversation partner or topic. The patterns of who is talking to who at one event reveals only a snapshot of those dialogues, not how they are changing over time.

Encouraging and supporting collaborations, new projects or connections between communities such as scientists and educators have been an important goal for all COSEE centers. Measuring

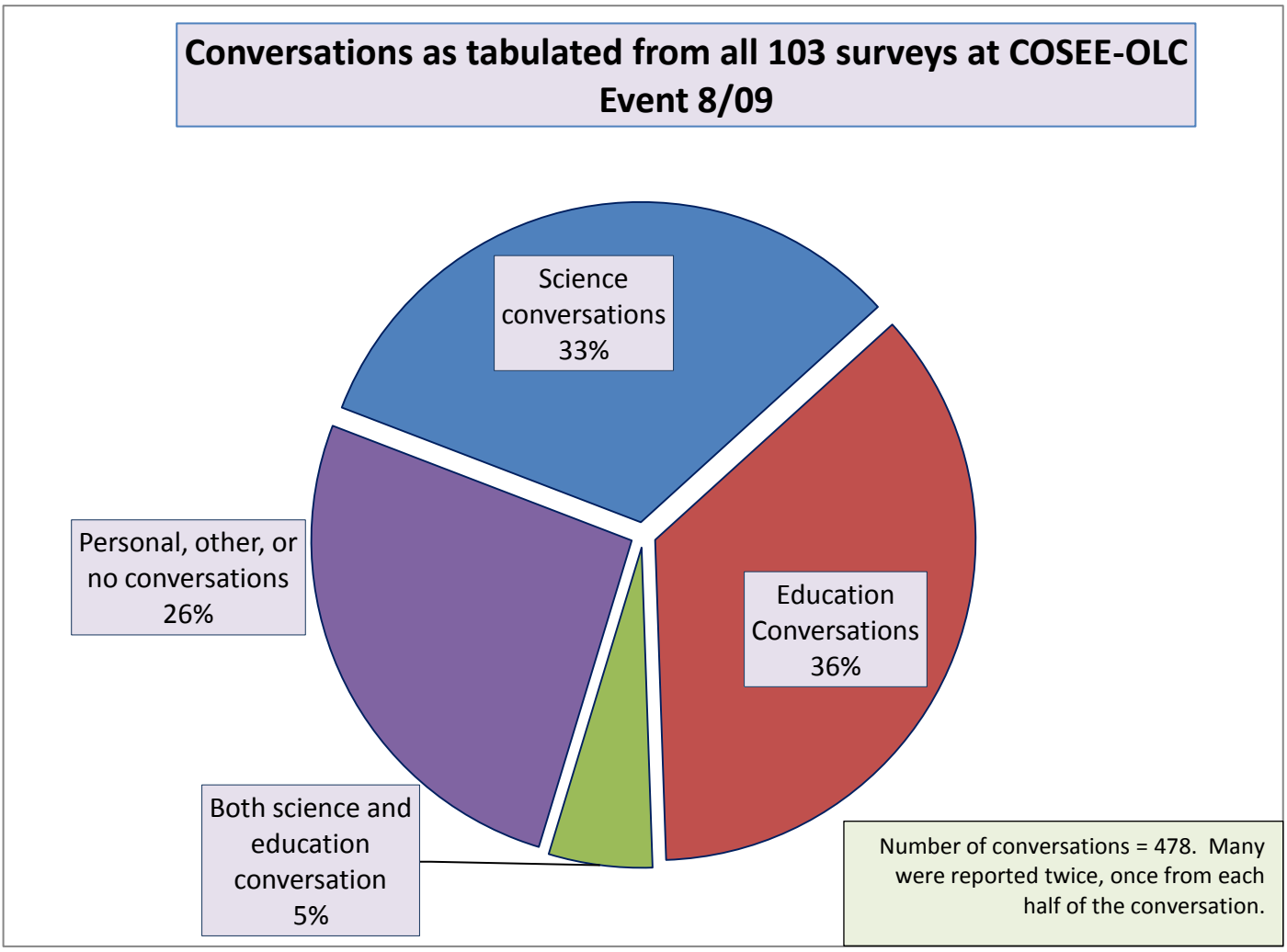
how this connectedness evolves over time would be significantly useful in determining the usefulness of various strategies, programs or events.

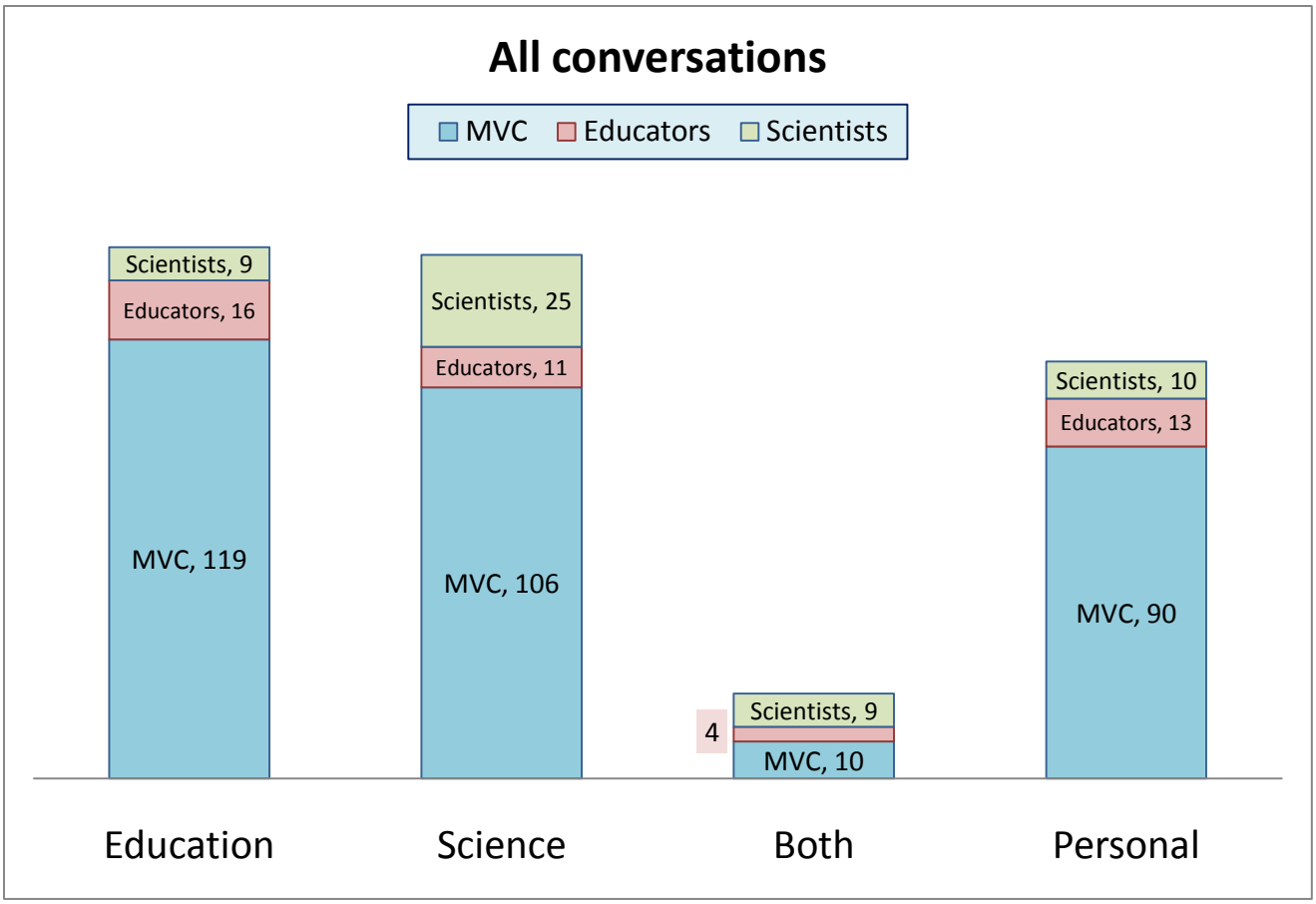
The statistics show that volunteers at this event engage in many more conversations, per person, than the scientists and educators. Is this because scientists avoid small talk, or do scientists tend to talk longer, possibly going deeper into a subject? Do these parameters apply also to teachers? If more events had this conversation tracking, possibly combined with some questions to elicit meaning and rationale behind the choices, further analysis would be possible.

Additional analysis could look at which individuals are key information conduits or relationship builders through multiple situations or a longitudinal social network analysis. Better decisions about supporting and nurturing growth of these critical points or networks could then be done.

Further evaluations could also focus on the cumulative emails of the PIs to discern trends in their social network, an approach which has numerous pitfalls and privacy challenges.

Appendix A

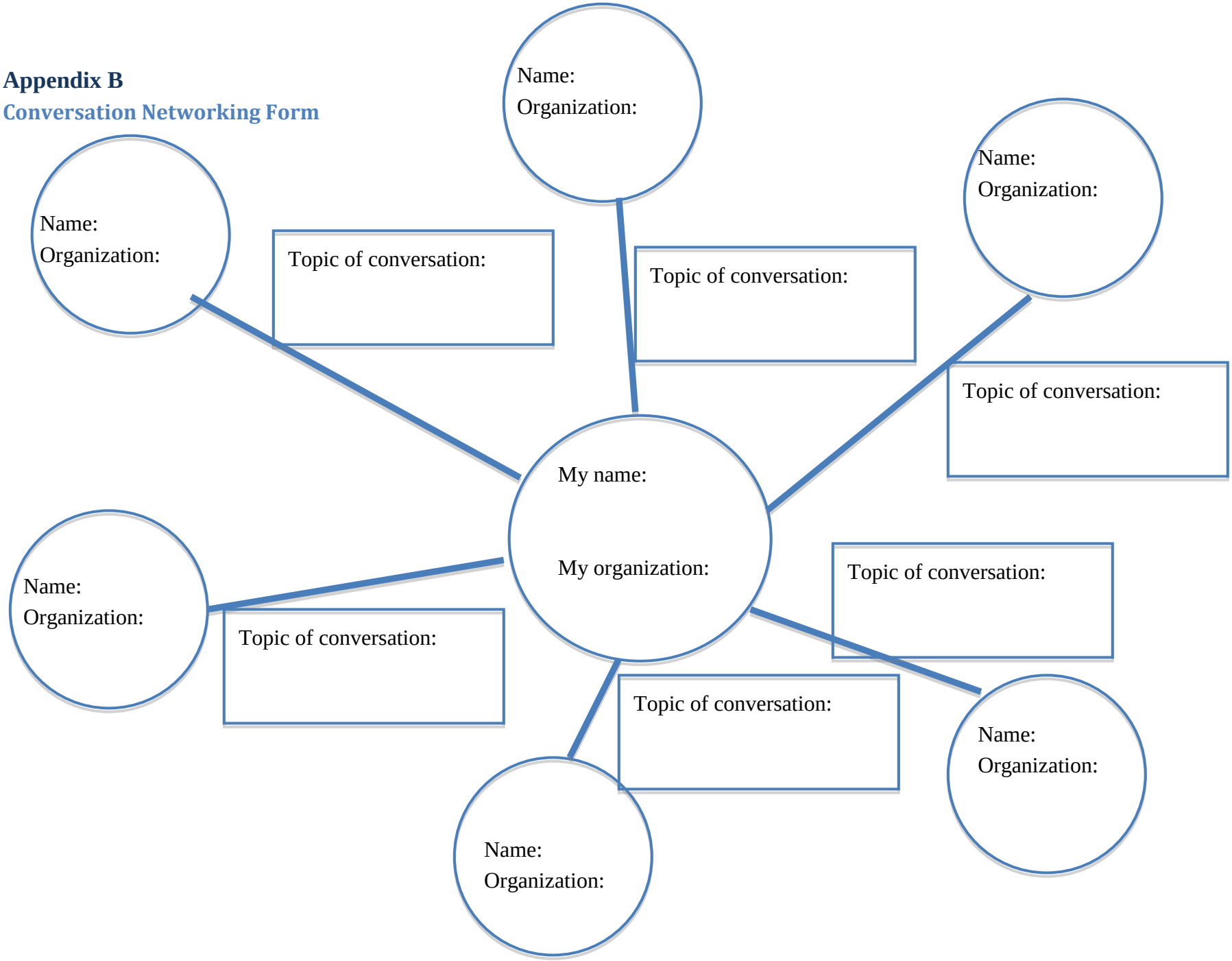


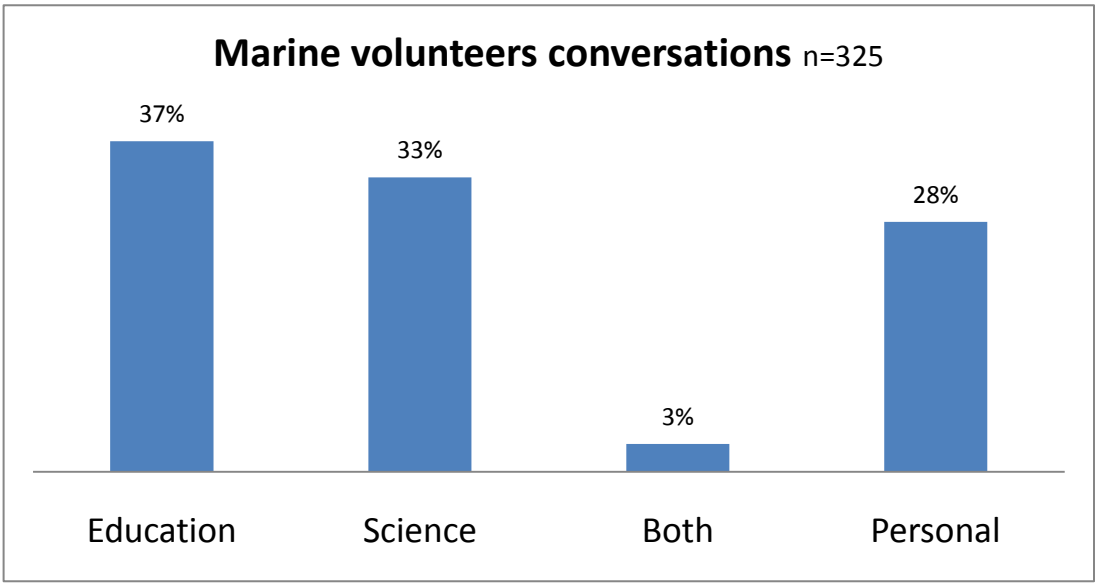


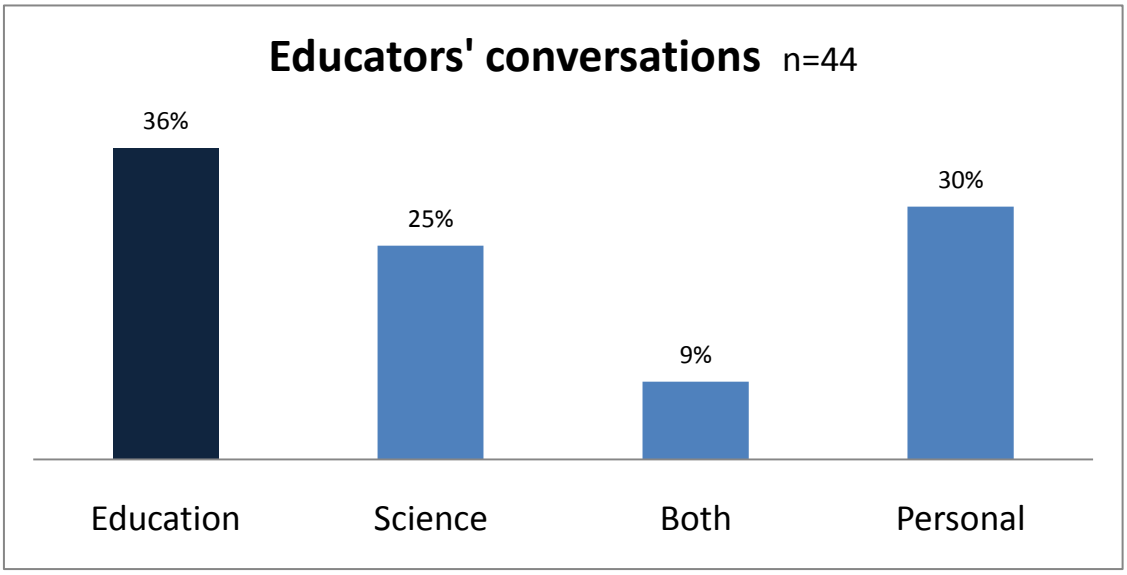
478 conversations among 103 participants

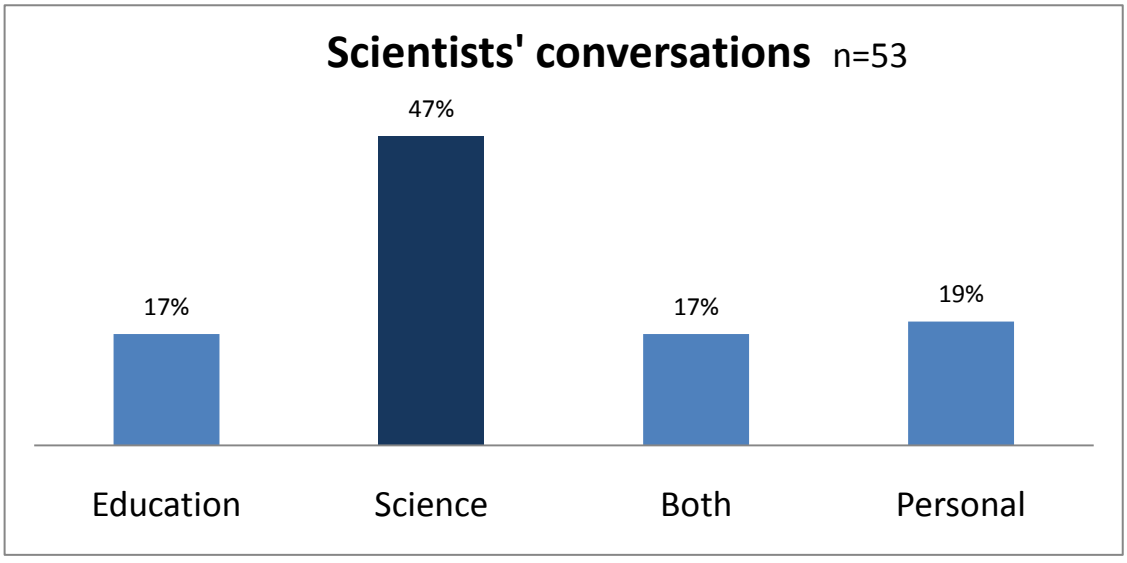
Appendix B

Conversation Networking Form




Marine volunteers conversations n=325
37%
33%
3%
28%
Education
Science
Both
Personal


Educators' conversations n=44
36%
25%
9%
30%
Education
Science
Both
Personal


Scientists' conversations n=53
17%
47%
17%
19%
Education
Science
Both
Personal

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