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# TEACHING NETWORK LEADERSHIP:
## Using Collaborative Structure and the Remote Associates Test

## Abstract

In this application briefing we describe an inductive learning activity designed for an executive-level leadership development session on leadership networks. We separated participants into nine teams of different sizes and varying access to collaborative networks among the teams. Each team was given the same word association challenge consisting of 25 problems and tasked with getting as many completed and correct as possible. Results showed those with access to collaborative networks were able to complete more of the word association tasks and had more correct word associations. Through this exercise we were able to demonstrate the importance of utilizing social networks for work-related purposes and illustrate the network concepts of isolates, bridges and brokers, and structural holes.

## Issue Statement

Typically, the focus of organizational leadership development programs is on increasing the individual-based knowledge, skills, and abilities an up-and-coming leader will need in order to be successful in an organization (Day, 2000). However, as organizational environments shift at faster and faster paces and the problems organizations face become more and more complex, the need for leaders to engage in collaborative approaches to address these issues becomes further apparent (Day, 2000; Day, Fleenor, Atwater, Sturm, & McKee, 2014).

Although the need to focus on more collaborative, relational, and multilevel approaches to leadership is becoming prominent, recent findings show fewer than 35% of leadership development practitioners are incorporating social network analytic techniques in their development initiatives (Cullen-Lester, Maupin, & Carter, 2017). We have also found a dearth of network exercises in publications that demonstrate the benefits and limitations of working in networks. As such, we set out to create an exercise that would introduce and illustrate network concepts to participants in our executive-level leadership development program. We felt this connected with Priority I of the National Leadership Education Research Agenda in that it connected two streams of research, social network analysis and leadership development, in a creative and engaging way (Andenoro, et al., 2013).

The network of relationships a person has in an organization can play a large role in the success or failure of projects. Evidence has shown the types of networks and working relationships we form in our organizations can affect everything from our health,

career, and how we see ourselves as part of the organization (Kilduff & Tsai, 2003). We propose that organizational complexity can be conceptualized as a system of various networks and these networks within the organization succeed or fail depending on how well the network shares expertise, learning, experiences, and resources among the interacting units (Ghoshal & Bartlett, 1990) and it is this conceptualization of shared complexity we desired to simulate. That is, to show how organizational structure can facilitate or restrict actions based on a business unit network and connection to other units (Balkundi & Kilduff, 2006).

Drawing on a broad hypothesis of network theory the following exercise should demonstrate that groups or people's position in a network determines the opportunities and benefits to share information and expertise. By identifying the connections in the participants' network and utilizing those connections effectively and efficiently, the participants understand how desired outcomes such as performance and collaboration can be enhanced by their connections in the network compared to participants whose network connections and opportunities are more restricted (Borgatti, Everett, & Johnson, 2013). Leading through utilization of networks requires leaders and group members to take into account a leadership of context, what connections are available or gaps must we overcome, and leadership of process, where leaders must also manage the task at hand. Through both types of leadership, the emerging collective action produces both learning and adaptive outcome for group success (Schreiber & Carley, 2008).
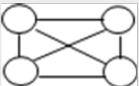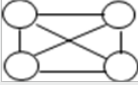
The activity we describe below is meant to serve as an example of an exercise that can be used to demonstrate the power and utility of leadership networks. By creating "networks" within a larger group of individuals and asking them to draw on the collective knowledge and creativity of network members, we hoped to illustrate the importance of collaborating with others to create better outcomes for organizational and leadership issues. Our exercise was reviewed and cleared by our organizational Institutional Review Board.
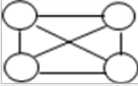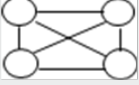
## Method

Participants. Participants for this exercise were 23 employees from an academic medical center in the central United States who were enrolled in a year-long, executive-level leadership development course. To be eligible for the course, participants had to be at or above the level of a director, business administrator, or faculty member within the organization. Examples of participant roles in the organization for this iteration of the leadership development program included Clinical Directors, IT Directors, Associate Deans, Research Directors, Human Resources Directors, and Financial Directors.

Creating Teams. Participants were separated into teams by drawing numbered slips of papers we prepared ahead of time. There was one slip of paper with "Team 1," four with "Team 2," and so on according to the team structures seen in Figure 1 below. Once all the slips were drawn, participants were asked to find their teams.

| Team | Team Structure | Network Access | Team | Team Structure | Network Access |
|---|---|---|---|---|---|
| 1 | ○ | Must work alone. No network access | 6 | (4-node structure) | Allowed to collaborate with Team 5 |
| 2 | (4-node structure) | Only allowed to work with team members | 7 | ○—○ | Allowed to collaborate with Team 8 |
| 3* | ○—○ | Only allowed to work with team members | 8 | ○ | Allowed to collaborate with Teams 7 and 9 |
| 4 | (4-node structure) | Allowed to collaborate with Team 5 | 9 | ○—○ | Allowed to collaborate with Team 8 |
| 5 | ○ | Allowed to collaborate with Teams 4 and 6 | 10 | (4-node structure) | Only allowed to work with team members |

*\* Team 3 was not utilized due to the number of people who attended the session*

Figure 1. Team Structures and Network Access

Remote Associates Test. When participants had grouped into their teams, we handed out the Remote Associates Test (Bowden & Jung-Beeman, 2003) and the instructions of how each team could or could not collaborate with other teams (see Figure 1).

Mednick (1962) developed the Remote Associates Test (RAT) as a means of measuring creativity appropriate for members of a shared culture. The test is built on verbal associations and is constructed as a series of verbal association problems. Several words from mutually distant associative clusters are presented to the participant; the participant's task is to provide mediating links between the words. For example, the three words SAME/TENNIS/HEAD are associated with the solution MATCH by means of synonymy (same= match), semantic association (tennis match), and the formation of a compound word (matchhead). Reaching a solution requires "creative thought," often the first, most related, information retrieved for the solution is incorrect, and solvers must think of more distantly related information in order to connect the three words (Bowden & Jung-Beeman, 2003).

The teams were given twelve minutes to correctly complete as many of the word associations as they could. They were asked to keep track of their answers on two separate answer sheets. The teams kept one answer sheet to use during our discussion and turned one answer sheet in to us as a data collection tool.

## Discussion of Outcomes

After the completion of the word association task we debriefed the class allowing participants to share their experiences and their observations in the learning activity. Immediately, team members recognized the importance of the size of teams and assigned networks and how the size of a network can affect problem solving ability. Some participants also pointed out that not all people are good at the remote association test and to have access to a person on your team that does better or has expertise is a boon for the whole team in problem solving. Some groups even lamented not being able to communicate to someone in the classroom that they knew would be good at solving these types of word problem. So, the overall goal of the activity to demonstrate how networks and network makeup including having access to "expertise" has a significant impact on collaboration and problem solving was apparent to

the participants.

Others communicated that having people that think or mentally process problems differently was also helpful in the task. This gave us an opportunity to talk about the importance of network diversity and having a network of different backgrounds and experience allow innovative and novel ideas to be discussed (Han, Han, & Brass, 2014). These differing experiences often led to new avenues of thought and ideas that open up a fresh set of possible solutions. Again, we were able to point out that networks that are formed by like-minded people are often socially comfortable but can be limiting to the group's ability to think of innovative solutions. And social groups that are formed with members of a diverse backgrounds can be challenging initially to form relationships but often the broad range of shared experiences can lead to new sets of potential solutions in problem solving.

We even had one person acting as bridge, a unique position in the network connecting two larger groups together, share the wrong answer with one of the connected groups but he had written the right answer on his paper. This was a point of humor in the learning discussion but a great way to show how a larger group could position themselves to be subject to the social power and knowledge of just one socially well position person.   For those groups that did not have access to anyone that could bridge groups, they talked about the limitation of their structure and we were able to talk about structural holes in their network.

The final learning take away was the discussion of the power of the isolates that could share and socially connect different groups.  We took the opportunity to point out the importance of these single members forming intellectual bridges between groups and the power they had to share or withhold information and solutions. The two people that acted as bridges shared their experiences moving information from group to group. The person that had to physically move between two groups talked about the energy and time required to fulfill their role to both groups. We did not actively talk about the cost of social

positions and network interactions, but this could have been a good example of the social cost of holding a particular position in a social network as the bridger. The isolate-bridger had to decide how much time to spend with each group and when it was in his or her best interest to move to the other group.

Through the discussion held with the participants, group members could clearly see how network connections and position in the network can be used as a resource for collecting ideas in the RAT task and sharing intellectual capital with other groups. Groups, team members, and isolates which lacked connections or position in the network saw much less collaborative exchange and thus had a weaker performance in the RAT task.   In this exercise the ability to share information and allow collaboration is tied to network utilization supporting the idea that opportunities that affect performance are tied to connections and positioning within the network (Borgatti, Everett, & Johnson, 2013).   We took the time to guide our discussion to help participants see beyond the exercise and apply these ideas to their workplace. We pointed out that recognizing the network and connections across any organization can give people more opportunity to access new resources and expertise beyond their own department thus improving ideas, creating space for collaboration, and sharing expertise to increase the opportunities for teams to learn and adapt and increase their chance of success through networked connections (Schreiber & Carley, 2008).

## Facilitator Observations

As participants worked on the word association task, we took note of how the teams interacted with each other in the "network."

The first thing we noticed was the disappointed look and frustration of the isolate who was not allowed to collaborate with other teams on the RAT task.   The person that made up Team 1, the only group without access to other teams, indicated she felt helpless and that trying to complete the RAT exercise was pointless

because it was too difficult and too large of a task for one person to complete. This individual immediately recognized his or her structure constraint because we often rely on others in our networks to help make decisions (Kilduff, 1990).

The second point of interest was how the individuals that made up Teams 5 and 8, isolates who could serve as bridges or brokers to connect other teams, would interact with their partner teams. People whose network position allow them to act as go-betweens within the structure, connecting otherwise disconnected individuals and groups, tend to garner many benefits because of the social positioning (Podolny & Baron, 1997). This social positioning can benefit the individual in such a way they can draw upon the information from both groups but only share information as it benefits the individual or the individual can become a pipeline of information between the isolated and siloed groups. Teams 5 and 8 both have the opportunity to bridge the divides in the network.

We noticed the individual who made up Team 8 and could serve as a bridge between Teams 7 and 9, actually decreased the spatial distance and brought the two disparate teams closer together in order to benefit both teams thus taking a leadership role in giving both teams direction to slightly alter Team 7 and 9 positioning to facilitate the flow of information.

The individual who made up Team 5 and could serve as a bridge between Teams 4 and 6 took a different approach. Teams 4 and 6 happened to locate themselves very close to one another, literally back-to-back in the room, which could have worked to the benefit of Team 5's isolated nature. Team 5 had the opportunity to have the larger groups of Teams 4 and 6 turn around and share information with each other, drawing on the collective problem-solving abilities of the larger group. Instead, Team 5 chose to walk back and forth between the teams sharing information with each group. Essentially, Team 5 reinforced silos within the group and chose the information that was helpful to his benefit instead of connecting the two groups and drawing on the collective creativity of the group (Podolny & Baron, 1997).

The group also contained two teams with identical structures, Teams 2 and 10. Both teams had four members that could only work within their own teams. One striking observation we had about these teams was how they interacted with each other. Team 2 sat in silence for the majority of the exercise, only beginning to talk amongst themselves with about 4 minutes left in the allowed time to complete the task. On the other hand, Team 10 began interacting with each other from the start of the task. The difference in these approaches are most notable in the number of correct associations made on the RAT exercise (see Table 1). While Team 2 completed more associations during the allotted time, Team 10 got more of their completed associations correct.

The different perspectives and ultimately the different method to address the problem could be seen as an example of how an individual understands their role within the network. Team 10 may have understood the task as a collective task to solve problems, so the primary focus is working together as a network of individuals and so Team 10 immediately put their connectedness to work sharing ideas and communicating potential solutions. Team 2 primarily saw this as a problem solving task that could draw upon the network as an asset to complete the task. A team or individual perception of role of a network can have a significant effect on how a person utilizes the network (Kreindler, Dowd, Star, & Gottschalk, 2012). Either way Team 2 suffers from the 'liability of connectedness' where a network suffers from a reduced capacity to participate in the ongoing process of learning, sharing and innovation (Powell, Koput, & Smith-Doerr, 1996)

The benefits of collaboration are also evident in the percent complete and percent accurate sections of Table 1. Even though the two individuals in the broker roles chose different strategies in how they connected or shared information with other teams, all six teams who could collaborate in some way had higher percentages in completion and accuracy. Teams 2 and 10, who could only collaborate within

their own teams, illustrate this as well.  Team 2, who did not work collaboratively with one another, only completed 20% of the tasks and were only 20% correct whereas Team 10, who collaborated with each other from the start, completed 32% of the tasks and had an accuracy rating of 62.5%.

Table 1.
RAT Percent Completed and Correct .

| Team | Completed | Correct | Percent Completed | Percent Correct |
|------|-----------|---------|-------------------|-----------------|
| 1 | 5 | 1 | 20% | 20.0% |
| 2 | 19 | 2 | 76% | 10.5% |
| 4 | 14 | 6 | 56% | 42.9% |
| 5 | 14 | 8 | 56% | 57.1% |
| 6 | 17 | 11 | 68% | 64.7% |
| 7 | 12 | 8 | 48% | 66.7% |
| 8 | 12 | 5 | 48% | 41.7% |
| 9 | 13 | 7 | 52% | 53.8% |
| 10 | 8 | 5 | 32% | 62.5% |

## Recommendations

As we begin to incorporate this exercise into our regular leadership development curriculum, there are few things we will change before the next iteration.  First, we recommend using an easier version of the RAT exercise.  There are multiple levels of difficulty for the RAT exercise and for the experience described above, we utilized a moderately difficult version which may have led to some frustration and disillusionment with participants.  Many of the participants stated the associations were difficult and only one team was able to get over ten correct associations.  Using a less difficult version of the RAT should allow facilitators to help participants pick up on the network aspects of the exercise instead of having participants focus on how many of the associations they correctly answered.

Another way to enhance this exercise would be to physically separate the teams in different rooms to make it more like their organizational setting.  In the practice described here, all teams were in one large lecture space because we did not have the option of putting them in different spaces.  This could enhance the exercise by providing a more realistic organizational environment for participants.  By cordoning them off in different spaces, the isolates can feel more isolated, the bridges will have to draw on more of their leadership skills to break down silos and bring teams together for a common goal, and isolated teams can see how connecting with other teams and individuals can help them excel in their work.  While all of the participants for this exercise work for the same organization, very few of them work within the same building as the others.  Adding this element to the exercise could help them realize the need to reach out to other teams, departments, and subject matter experts in order to create better results for their teams and the organization.  For some teams, it may lead to the realization that their networks are too expansive and that network pruning may be necessary.

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