

NETWORK SCIENCE

Play Dough



| NE STEM 4U

Play Dough

Objective

The student will understand the basic concept of brokerage roles and their applications to health communication through gameplay.

The student will be able to demonstrate how liaisons, a form of broker, have more power than others in communication networks.

Vocabulary

Broker: A “middle person” between two separate nodes; vertex that plays an important role in the access and sharing of information; a broker is connected to two or more nodes that are not connected to each other, so each node must communicate with other nodes through the broker. (e.g. a third party who is not the buyer nor the seller)

In the example below, the blue nodes are connected to the orange broker node but have no connection to each other; thus, they must use their connections to the orange broker to exchange information from blue node to blue node.



Liaison: A type of broker in a network in which each node belongs to a different group or category. For example, the blue node below represents a member of NE STEM 4U; the orange node, drama club; and the purple node, the soccer team. The soccer player (purple node) needs help on math homework, so they ask their classmate who is in drama club (orange node). The drama club member asks their friend who is in NE STEM 4U (blue node) for help. Thus, the drama club member is a liaison between the soccer player and the NE STEM 4U member.



Background

Brokers play an important role in the access of information and transactions. What makes a person a broker is the fact that the parties the broker is connected to have

no way of communicating with each other without the broker. This gives a broker power in what they choose to do with the information they have received.

For more information, see the brokerage role sheet (Handout 2). According to the brokerage role sheet, there are five different types of brokers. The brokerage roles can all be depicted as having directed or undirected lines, except for the gatekeeper and the representative. Directed lines are used to differentiate between gatekeepers and representatives, but if the lines are undirected, then the situation depicts a broker that is both a gatekeeper and representative. Vertices that are different colors in the brokerage role depictions mean that they belong to different groups, while vertices that are the same color indicate that they belong to the same group. The second vertex in every brokerage role depiction on the brokerage role sheet is the broker. A liaison is a type of broker where everyone belongs to a different group or category. People are not always aware that they are brokers, so analyzing their social network can allow them to determine their role(s) and discover how information flows within that network.

Materials

Activity One – Liaison Game

Whole Class

- Example 1 – Brokerage Role Network

Activity Two – Play-Doh Liaisons

Per group (3 students each)

- Play-Doh
- Play-Doh cut-out tools
- Folder board
- Pre-made Play-Doh sculptures
 - a. You could have the students make some shapes with Play-Doh before starting the lesson.
 - b. For the first round, use the shape in Figure A. The remaining shapes should be created by the student who was previously the sculptor before each round.
- Handout – Brokerage Roles
- Play-Doh Liaisons Set-up Guide

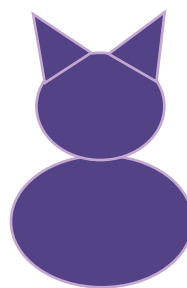


Figure A.

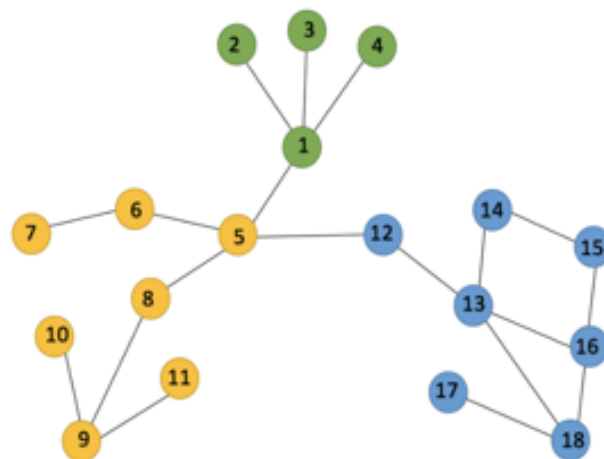
Procedure

Set Up

- Push desks to the back of the room. When students arrive, ask them to sit in a circle on the floor.
- Provide one pre-made Play-Doh sculpture to each group of students for each round. Groups can have the same sculptures or different ones.
- See the set-up guide to help you set up folder boards and direct students on their roles and seating.

Activity 1 – Liaison Game

1. Do a quick (5-min) run-through of the game of Telephone with students (e.g. share a sentence with one student and have the student whisper the sentence to the next student in line; repeat until the last student hears and repeats the sentence aloud).
2. Discuss: *What are some things that can spread in a network of people? Possible examples:*
 - a. Diseases
 - b. Information
3. When information spreads in a network of people, some people can get more information than others and can even control who gets that information. Let's take a look at this network (Example 1 - Brokerage Roles):



- a. *If each vertex in this network represents a person and the connections represent friendship, then the different colors represent a different friend group. Which person do you think is going to be able to access the most information?*

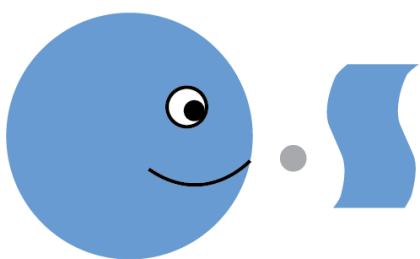
- i. The person at vertex 5 can get information from anyone because they are connected to people from the yellow group, someone from the blue group, and someone from the green group.
- b. *If everyone in the green group shares with all their connections that they are giving out free ice cream at recess, how would the blue group know?*
 - i. The blue group would need to get that information from the person at vertex 5. The person at vertex 5 can control where the information goes. They have power over this information because they can decide whether to tell people from the blue or yellow group.
- c. *What would happen if we removed Vertex 5?*
 - i. Then there would be no way for the yellow or blue group to find out about the free ice cream. Again, vertex 5 can control the flow of information. People with this power are called brokers. There are five types of brokers; today we are going to play a game and talk about two different types.

Activity Two – Play-Doh Liaisons:

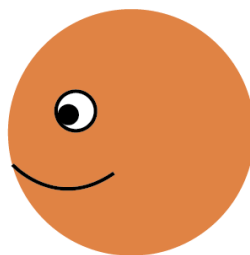
1. Participants sit on the floor in rows of 3.
2. Draw the following on the board to help students orient themselves and know the roles and limitations for each of the three positions (i.e. gesturer, communicator, and sculptor):

This drawing is especially helpful for the wrap-up where youth will indicate which direction the information is flowing. (See the photo above as the set up in the classroom or space of your choosing).

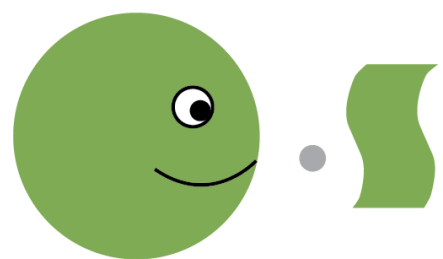
3. Game Rules:



Gesturer

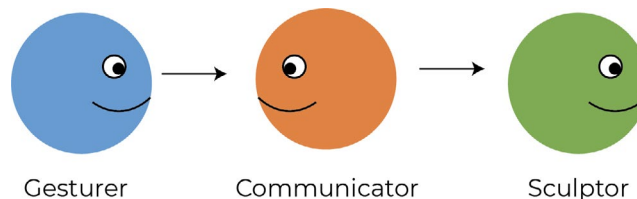


Communicator



Sculptor

- a. There are three different roles:
 - i. The **gesturer** has access to the Play-Doh sculpture that the sculptor must replicate. (Set up a folder board to keep others from seeing the clay sculpture.)
 1. Must only use gestures to communicate what they see
 2. Must remain silent throughout the game
 - ii. The **communicator** faces the gesturer and interprets what the gesturer is gesturing.
 1. May speak
 2. Must face the gesturer at all times during the game
 - iii. The **sculptor** must replicate the sculpture that the gesturer sees using the information from the communicator. (Set up a folder board to prevent others from seeing their sculptures.)
 1. Must remain silent throughout the game
- b. Each round should be around 5-7 minutes long. There should be 3 rounds where each person alternates roles, so everyone has a chance to play each role once.
- c. At the end of each round, have students place their original sculpture next to the new creation to see how they compare. Ask them what they thought about their roles.
- d. At the end of the third round, have students look at the drawing you drew on the board from the beginning of class and ask them which direction the information about the sculpture was flowing. Draw directed or undirected edges/connections depending on what the students suggest.
 - i. The drawing should look like this:



4. *What do you think would happen if we cut out the communicator BUT added a direct connection between the gesturer and sculptor? Do you think it would be easier or more difficult to replicate the sculpture? Let's try it!*
 - a. Tell students who were the communicators for the last round to partner up

with another communicator so that groups consist of only two people, a gesturer and sculptor.

- b. Both gesturers and sculptors should have a folder board in front of them to prevent cheating.
 - c. This round should also be 5-7 minutes. If time allows, have the gesturer and sculptor switch places and play an additional round.
5. Can you think of examples of brokers/liaisons in your life?
- a. For example, if you have siblings, is one better at getting something all the kids in your family want from your parents?
 - b. Can coaches be liaisons?

Differentiation/Extension

Hand out sheets depicting the five different types of brokerage roles (see Handout 2) and have youth make a list of any personal situations/ movies/games where they have seen brokerage roles in action.

Guiding Questions

- Which role was harder than another? Who received information and controlled where it was shared? What would happen if we removed this person (the broker)? *Use Handout – Brokerage Roles to aid in this discussion as needed.*
 - If you remove the broker, the other two people would not be able to communicate at all. There would be no way for the sculptor to replicate the sculpture because the gesturer would have no one to transmit information to and the sculptor would have no one communicating to them about what the sculpture looks like.
- What types of miscommunications might occur if there were no liaison between two separate types of individuals?
 - *Have the students consider individuals who might speak different languages or belong to different professions.*
- Can you think of any situations in your own life where YOU were the one to receive information and control where it went? How about health-wise?
 - *Ask the students if they have ever had to communicate with a doctor on*

behalf of a family member.

- Do liaisons always have to be people? Would technological liaisons be more or less effective?

Take home messages:

- The same person in a “liaison” role has more power than when they are not in that role. Why? Because they have information that others need and cannot get another way.
- In the health field, communication is extremely important. Consider, for example, a patient, a doctor, and a pharmacist. When a patient goes to the doctor, they tell the doctor what is wrong, what kinds of allergies they have, and if they have been taking medication lately. The doctor has to communicate this information with the pharmacist, who needs to make sure the doctor does not give the patient medicine that will react to the ones they are already taking and give them the right amount of medicine to take. The pharmacist can also check that the doctor gives the patient medicine that will not cause serious side effects. The pharmacist communicates this to the doctor and then the doctor can prescribe the right medicine to the patient.

Career/Future Application

Sociologists and communication researchers can use networks to study how people interact, spread ideas, and share information.

References

Vocabulary terms were adapted from the following book:

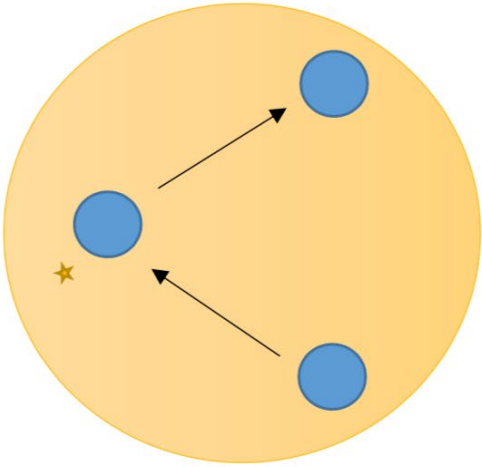
Nooy, W. D., Mrvar, A., & Batagelj, V. (2005). *Exploratory social network analysis with Pajek*. Cambridge: Cambridge University Press.

Chapter 7: <http://vlado.fmf.uni-lj.si/pub/networks/course/ch07/Chapter7.pdf>

This activity was adapted from the following source:

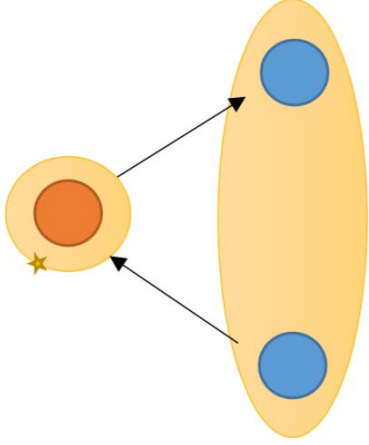
<https://smallbiztrends.com/2015/09/team-building-exercises-and-games.html>

Brokerage Roles



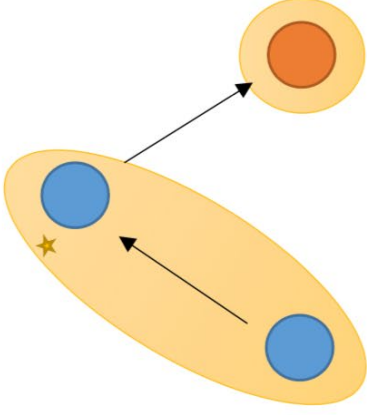
Coordinator

Someone whose job is to organize and work with others to achieve a goal



Itinerant

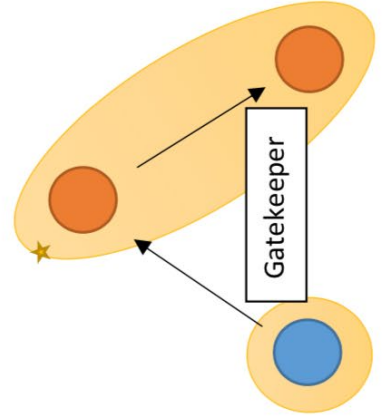
A person who moves place to place (moving information)



Representative

A person who represents a group of people (e.g. Mentors representing NE STEM 4U)

Someone who controls access to something (e.g. information from one group to another)



Someone who facilitates the flow of information between groups of people.

