Could You Clarify That?

Understanding the Process of Science

Theory-

Scientific achievements are of little value unless they are shared with other researchers and ultimately with the public. Researchers need to explain their experiments and their ideas so that other scientists can attempt to replicate their results. Successful ideas are those that withstand repeated challenges. Thus, clear and precise communication is essential to science.

This laboratory will reveal the importance of accuracy, precision, and clarity in oral communication. A student will try to recreate a toothpick model based only on oral instructions from another student. The best effect will be achieved if this is done a few times and there are varied degrees of success, so that a comparison can be made.

Materials-

Toothpicks/popsicle sticks (10/student group)

2 students per group

Procedure-

1. Two partners should sit not facing each other, each with their toothpicks.

2. Partner 1 makes a shape with his/her toothpicks, without partner seeing.

3. After the shape is made, Partner 1 should **write down step by step directions for how to make the shape (script). DO NOT show Partner 2 the shape**. (start with a simple shape and progress into harder shapes in 3 future trials)

4. Once Partner 1 has completed writing out the script, read the script to Partner 2 so that he/she can build it. **ONLY FOLLOW YOUR SCRIPT- DO NOT USE OTHER WORDS!!!**

5. Partner 1 (scripter) **cannot see Partner 2's (builder) design until finished**.

6. Once Partner 2 has finished making the shape, draw it in the data table. Also draw the original shape.

7. This process should be repeated 3 more times. Each time should be a different shape.

Data

Original Shape 1 (Partner 1)	Original Shape 2 (Partner 1)	Original Shape 3 (Partner 1)
Builder's Attempt 1 (Partner 2)	Builder's Attempt (Partner 2)	Builder's Attempt (Partner 2)

Conclusion

Look at your data and compare the original shape to the builder's attempt. (Were they similar or not so much?)

Discuss with your partner the problems that were found.

Take notes on your discussion.

Once your partner discussion is complete, converse with another group within the class about the problems they had with their tasks.

Discussion Notes: (one per attempt)

Formal lab write-up-

1. Type up your 3-4 scripts.
2. Include your drawings.
3. Using your discussion notes, explain any difficulties/challenges in completing the task. What problems did you encounter? Why didn't the original shapes match the builder's shapes? What conclusions did you reach?