

Teacher Instructions for The Memory Game An in-class experiment and hypothesis test

What you'll need in advance: Copies of both sets of directions, enough of each for $\frac{1}{2}$ of the group. Also, enough copies of the questions for the entire group. You'll need one set of "statements." Students will only need a pen or pencil, and a couple will need calculators to compile results at the end of the game.

1. Using a recognizable method of random assignment, break the class down into two "teams" of equal size. Physically separate the two groups so that, ideally, they can not see the other team's papers. Remember, if they realize early that they are receiving different directions, the experiment is blown.
2. Inform the class that in order for the game to "work," they must be absolutely silent for the next five minutes. Tell them that they are playing a competitive memory game and we'll see at the end which team "wins." This also serves that in case someone realizes the two sets of directions are different, they are forced to remain silent about it.
3. Distribute the directions to "team 1" and "team 2." Randomly determine which group receives which set of instructions: control (no training) and treatment (memory training). You need to be subtle about the distribution of papers so they don't notice that there are two different sets of directions. I usually have the two stacks on top of each other, and deal them out, first from the top of the pile, then from the bottom.
If possible, you can get a third party to distribute the directions. As long as you don't see which group has which set of directions, then you can create a double-blind situation, though this is often hard to pull off in a high school classroom.
4. Read the 25 statements. I usually stand in the center of the front of the room and stare straight ahead, making certain not to make eye contact with any one student or group. **DO WHAT IT TAKES TO KEEP THEM QUIET, HOWEVER!**
5. Distribute the questions. Everyone gets the same questions, so this distribution is accomplished by whatever method is efficient. Keep the question sheets face down until everyone receives them.
6. Say start. They have 3 minutes to answer as many as possible.
7. Stop the writing. Now they can talk. Have them exchange papers with a member of their own team, and read off the answers. All answers are marked either correct or incorrect, there is no partial credit or middle ground (e.g. the answer is "Korea," answers of North or South Korea are simply marked wrong). Have them count the number correct and write that score (0-20) on the top of the page.
8. Have a couple of members of each team grab calculators and calculate sample mean, standard deviation, and n for each group. Have them put these statistics on the board.

There will be some exuberance when the “winning team” is realized. In 16 trials of this game at four different schools with three different teachers, (as of 5/30/2009), the treatment group have always won.

9. **NOW** – inform the class that they have just been the subjects of a controlled experiment (maybe double blind). See if they can identify the treatment (the different directions). Have them come up with a null, alternative, etc.... At this point, there’s a lot you can do pedagogically depending on the outcome, and what you want to stress (experimental design, inference testing, etc.) and how much time you have.

10. Have them run the two-sample t-test to compare the means and write a conclusion in context.... Again, this is left to your own pedagogy.

My history: Though I have only had a statistically significant (at $\alpha = .05$) result a handful of times, the treatment group has never failed to “win” the game. I have 16 trials of data, and growing. I briefly used this result to mention the sign test to my classes this year (2009), though it’s not part of the curriculum, so I didn’t dwell on it.

Send me your results and your feedback!!! If it’s ever published, you’ll get a mention, I promise. THANKS & GOOD LUCK WITH THE MEMORY GAME!

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The Memory Game

Directions

Over the next few minutes, we will test your memory. This is NOT an IQ test. When the game is over, you will have an opportunity to compare your memory with others in the room, however, it is not a competition among individual students.

The teacher will read the class a list of statements. You may not write anything down and you may not talk or communicate with anyone. After the list of statements is complete, everyone in the class will silently attempt to answer a series of questions regarding the statements you just heard. Answers will be marked either right or wrong, and your answer sheet will be anonymous.

You will be handed the list of questions as soon as the teacher finishes reading the statements. For the next few minutes, your task is to **LISTEN** quietly and **TRY NOT TO FORGET** what you hear.

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You will be handed the list of questions as soon as the teacher finishes reading the statements. For the next few minutes, your task is to **LISTEN** quietly. The **BEST TECHNIQUE** for short term memory recall is to **VISUALIZE** whatever you hear. For example, if the teacher says “the red motorcycle was in the barn,” you might picture a red motorcycle in a barn. **ATTEMPT TO VISUALIZE IN YOUR MIND all of the statements the teacher reads!**

Statements for *The Memory Game*:

1. The orange kitten was asleep on the green bench.
2. Business cards are quite expensive to produce.
3. In the park there were two ducks.
4. The brown truck crashed into the mailbox.
5. Five shirts hung from the exercise bicycle in the basement.
6. She mailed him a birthday card, but she forgot to put a stamp on the envelope.
7. The dead body of the sheep was full of maggots.
8. It is 6 o'clock in Korea.
9. Easter is Rebecca's favorite holiday
10. The deck of cards had five nines in it.
11. Gary prefers shrimp to steak.
12. 10 of my tulip bulbs flowered, but the deer ate 8 of them
13. The upstairs toilet is clogged up again
14. His television set did not receive channel 7
15. At church last week, I got a splinter from the pew.
16. 4 hikers were lost in the blizzard. They are presumed dead.
17. The web site Brad was surfing at school contained baseball scores.
18. After shooting 3 arrows, Benjamin hit the bull's-eye of the target.
19. The chocolate candy has walnuts and peanuts in it.
20. Gary wore a plaid flannel shirt to the store.
21. Two planes collided on the runway in the Canary Islands.
22. The storm clouds overhead seem to be drifting Southwest.
23. Yellow candle wax got all over the kitchen counter.
24. The evil super villain threatened to release death spores in the city's water supply
25. Michele's foot was bleeding because she cut it on a piece of sharp coral.

Answer as many questions as you can in 3 minutes based upon what you remember. Your results are anonymous. All answers are exactly one or two words. You may abbreviate, as long as it is clear what you are writing.

1. What color was the truck that crashed into the mailbox? _____
2. How many hikers were lost in the blizzard? _____
3. Where were the two ducks? _____
4. How many arrows did Benjamin shoot before hitting the bullseye? _____
5. Where did Gary wear a plaid flannel shirt? _____
6. What color was the bench on which the orange kitten slept on? _____
7. The stamp was omitted from an envelope containing what? _____
8. How many tulips remain? _____
9. What direction are the storm clouds drifting? _____
10. What did the chocolate candy have in it besides peanuts? _____
11. Where is it 6 o'clock? _____
12. What toilet is clogged up again? _____
13. What color was the candle wax that got all over the kitchen counter? _____
14. In what part of the house were the five shirts hanging? _____
15. What card were there five of in the deck? _____
16. Who looked at baseball scores on the internet? _____
17. Where did two planes collide on the runway? _____
18. What is quite expensive to produce? _____
19. Whose favorite holiday is Easter? _____
20. The dead body of what animal was full of maggots? _____