

Noise Impacts on Concentration and Learning

Description:

Students will experience the effects that noise can have on a classroom environment.

Objectives:

- To demonstrate how noise can affect concentration, attention, learning, studying, and other necessary classroom actions.
- To discuss the importance of finding a quiet environment to work in

Vocabulary:

Noise pollution

Recommended for:

5th – 12th grade students

Materials:

- Two Puzzles (provided below)
- Colored pencils or pens (optional)

Background Information:

Noise is any distracting, annoying, or unpleasant sound.

Method:

- Begin this activity without explaining the objective or procedures in order to get the best result.
- Distribute the first worksheet and explain only the directions of the worksheet. Tell students they will have 10-15 minutes to complete it. When the timer begins, play loud music and/or make other loud distracting noises. Collect worksheets at the end of the designated time so students cannot continue working.
 - To make checking the work easier, it may be helpful to have students use blue pen or pencil on the first worksheet and red pen or pencil on the second worksheet.
- Close all windows and doors to create the quietest environment possible. Make sure no students are talking or making any sounds. Hand out the next worksheet and allow students the same allotted time to complete it. Collect worksheets at the end of the allotted time.
- Hand out worksheet 1 and 2 and review together. Have students count the number of filled in spaces on each worksheet. Collect the data on the board or on a computer.
- Explain to students that they were participants in an experiment that measures noise impacts on concentration.
- Explain that the data collected from worksheet 1 was testing ability to concentrate in a noisy environment. Have students calculate average number of squares completed for worksheet 1.

- Explain that the data collected from worksheet 2 was testing ability to concentrate in a quiet environment. Have students calculate average number of squares completed for worksheet 2.
- *Statistical Analysis:*
 - Have students create a dot plot.
 - Compare the means, medians, modes.

Discussion:

- Discuss the results and experience with the class. Did you do better on one puzzle compared to the other?
- How did you feel during the tests? Did you feel differently during the test sessions?
- What do you think is the impact of noise on performance and concentration?
- How would you describe the sound environment within your school?
- Where do you normally study or do your homework? What is that sound environment like?
- What changes would you make to create a better environment in terms of noise level for you and other students?

Extension:

- Have students brainstorm ways to make their school have a quieter learning environment.
 - Examples: have teachers shut doors when doing a group activity, create posters to ask students to walk quietly down the hallway, etc.
- Have students write a persuasive letter.
 - What are they suggesting? *From their brainstorm.*
 - Why is it good for the students? *Make sure to reference the data collected on how loud environments affect concentration and learning.*
 - Who is their target audience? *Their principal? Their fellow students?*





































For more information contact:

New York City
 Department of Environmental Protection
 59-17 Junction Boulevard
 Flushing, NY 11373
educationoffice@dep.nyc.gov










Also visit DEP's website at:
www.nyc.gov/dep

Sound and Noise Sudoku Worksheet 1

Directions: Every column and row should have one of the nine Sound Symbols. They cannot repeat and all of the Sound Symbols must show up in each column and row. Using the given Sound Symbols, fill in the missing numbers.

Sound and Noise Sudoku Character Key

 Stereo	 Plane	 Rain & Thunder
 Bird	 Train	 Ice Cream Tunes
 Jackhammer	 Garbage Truck	 Cafe

Sound and Noise Sudoku Worksheet 1: Answer Key

Directions: Every column and row should have the numbers one to nine in it. They cannot repeat and all of the numbers must show up in each column and row. Using the given numbers, fill in the missing numbers.

6	4	1	5	7	9	8	2	3
2	9	5	3	1	8	6	7	4
8	3	7	4	2	6	5	9	1
3	8	4	2	6	5	9	1	7
5	1	6	9	3	7	2	4	8
7	2	9	8	4	1	3	5	6
4	7	2	6	9	3	1	8	5
1	5	3	7	8	2	4	6	9
9	6	8	1	5	4	7	3	2

Symbols:

- | | |
|---------------|--------------------|
| 1. Stereo | 5. Train |
| 2. Bird | 6. Rain & Thunder |
| 3. Jackhammer | 7. Garbage Truck |
| 4. Airplane | 8. Ice Cream Truck |
| | 9. Café noise |

Sound and Noise Sudoku Worksheet 2: Answer Key

Directions: Every column and row should have the numbers one to nine in it. They cannot repeat and all of the numbers must show up in each column and row. Using the given numbers, fill in the missing numbers.

5	4	2	6	8	1	7	3	9
3	9	1	4	5	7	2	8	6
6	8	7	2	9	3	5	1	4
8	7	6	1	4	5	3	9	2
2	3	5	9	6	8	1	4	7
9	1	4	3	7	2	6	5	8
7	2	8	5	3	4	9	6	1
1	5	9	8	2	6	4	7	3
4	6	3	7	1	9	8	2	5

Symbols:

- | | |
|---------------|--------------------|
| 1. Stereo | 5. Train |
| 2. Bird | 6. Rain & Thunder |
| 3. Jackhammer | 7. Garbage Truck |
| 4. Airplane | 8. Ice Cream Truck |
| | 9. Café noise |